

UP CLOSE KYOSHO'S MEGAFORCE MONSTER

BIGGER /S BETTER
TRINITY P-94

RADIO CONTROL

car action

THE WORLD'S BEST-SELLING RC CAR MAGAZINE

KILLER PROJECTS

STREET
OFF-ROAD
NITRO

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Trinity Reflex NT
Is "Build & Win"
for real?

TESTED
DuraTrax Evader ST
Ready-to-run gets racy

Mugen MSX3
Factory-built shaft machine

Kyosho MP-7.5 Sports
A Worlds winner you can afford

Program like a pro
Radio tips for nitro

Pull the plug on power loss

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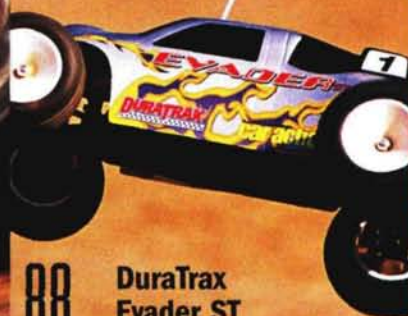
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TRACK TESTS



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by Peter Vieira

ON THE COVER: (from top) Trinity P-94 modified; Trinity Reflex NT. Inset (left to right): DuraTrax Evader ST; Mugen MSX3; Kyosho Inferno MP-7.5 (photos by Walter Sidas and Peter Hall).

It's Alive!

The radio control hobby has a certain "Dr. Frankenstein" appeal; after assembling your creation with your own hands, you flip a switch and ... it's alive! It isn't quite as dramatic as re-animating Boris Karloff via lightning bolts, but the thrill is the same. Of course, Dr. Frankenstein didn't just build a man; he built a monster—a conglomeration of disparate parts that was quite different (and had a flatter head) from any normal human. In our hobby, the real Frankenstein stuff happens when you decide to make a similar transformation to your RC machine, and you change your old competition truck into a 10-cell hill-climber, or you convert the pan car you scored from the "used" case into a drag ride, or (if you're Dan Burnham), you convert a TC3 touring car into an off-road buggy.

I think most of us started out in Dr. Frankenstein mode; I know I did. My first car began life as a buggy (a Kyosho Ultima, to be exact), but it was soon lowered for the street with the help of Pro-Line Striker tires and some DuraTrax "gold" shocks. Later, it was turned into a truck and then lowered again for gearbox-class racing with foam tires. The Ultima wore paddle tires for a day, got dressed up as a Sprinter with "Sideways" tires and eventually had all of its plastic parts replaced at least twice because I wore out the screw holes. In truth, the Ultima made a lousy truck and didn't handle on the street, and I had no idea how to make it work on carpet. But I don't think I could have had more fun trying! I enjoy tweaking race vehicles to turn fast laps in their intended environments, but the projects I really like to see are the ones that transform a vehicle into something completely unlike the original.

So what are you building? We would like to do a project-car feature based on your work—not that we're out of ideas! If you have a wild RC creation on your bench that you think belongs on the pages of *Radio Control Car Action*, send us a picture so we can see what you have. Creativity is key; we've done the mega-dollar all-aluminum thing. We want to see truly imaginative customs. And if seeing your pride and joy featured in *Radio Control Car Action* isn't incentive enough, the selected project vehicles will be returned with a special prize (you'll see what the prize is when we do the article). Email your pictures to me at peterv@airage.com (put "Project Car" in the subject box), or send them via snail-mail to *Radio Control Car Action* Projects, 100 East Ridge, Ridgefield, CT 06877-4606 USA.

This is one competition in which riding the bench is a good thing; so get to it!

IN THIS ISSUE

ALMOST HERE. By the time this issue lands in your mailbox, Kyosho's MegaForce should be landing on hobby-shop shelves. It's the first truck to square off against the Traxxas T-Maxx with a similar high-riding chassis and independent-suspension, electric-start technology, and we take a close-up look at it with our Kyosho MegaForce First Look.

BIGGER IS BETTER—at least, for motor brushes, according to our dyno testing of Trinity's new P-94 modified. The new mill recorded even more impressive numbers than a D4 with a lower wind without compromising efficiency. Check it out for yourself in the Trinity P-94 Dyno Test.

BUILD AND WIN OR DON'T BUILD AT ALL. This month, we review two vehicles that appear to be total opposites but have one thing in common. The Trinity Reflex NT is a pro-racing, all-the-options, nitro-powered touring-car kit—a "Build and Win" kit, according to Trinity. The DuraTrax Evader ST is a factory-painted, electric-powered, off-road stadium truck—ready-to-run right down to the included double-A batteries for the transmitter, so you don't have to build anything. What could they have in common? Both are the hottest vehicles of the moment in their respective categories. How good are they? You'll have to read the Track Tests to find out!

Peter Vieira
Executive Editor



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T-MAXX VS. MONSTER PIRATE

It seems to me that your competition between the T-Maxx and the Monster Pirate in the November 2001 issue wasn't really fair. Of course the Monster Pirate would be better able to tug Kevin; it has a .21 engine! To make the competition fair, you should have given the T-Maxx a .21 conversion and then seen which one could tug more of big ol' Kev! I have a T-Maxx and it has trouble dragging an empty wagon. [email] JORDAN HILL



OF COURSE THE MONSTER PIRATE WOULD BE BETTER ABLE TO TUG KEVIN; IT HAS .21!

DOUG GELOWITZ
New Haven, CT

RC Car Action's November 2001 issue had an article that referred to the engine in the Monster Pirate as a Force, but it appears to be a Hyper. I have a .21 OFNA Hyper in my T-Maxx, and it looks exactly like the one in the Pirate.

How about a shootout between your Hardcore Racing converted .21 T-Maxx (August 2001) and the OFNA Monster Pirate? I love your magazine; I've been reading it for about 14 years, and you guys do an awesome job! Keep up the good work!

NEAL
Livingston, MT

I'm not saying that it wouldn't be cool to see a .21 T-Maxx go up against the Monster Pirate. (My guesses: the T-Maxx would extend its lead over the Monster Pirate in climbing, equal it in top speed, top it in acceleration, equal it in pulling, equal it in the tug-o'-war, and durability would not be affected.) But I think most people want to see which truck is better straight from the box, and that's why we tested both box-stock. At about \$400, most hobbyists who take home a T-Maxx won't be looking to spend more money on an engine swap. Is anyone out there really trying to decide whether they should buy a .21-powered monster truck, or instead buy a T-Maxx, throw away its included engine, buy a .21 conversion kit and a new .21 engine?

You're right; we goofed. The Monster Pirate includes a Hyper engine.

—Pete

ONE IS ENOUGH

In the August 2000 issue of RC Car Action, Kevin Hetmanski explained that in his experience, a single modified motor in the Tamiya Juggernaut 2 provided excellent performance. Kevin wrote: "One motor was

plenty ... I gained an extra 2 or 3 minutes of fun (depending on the pack)." Similarly, I discovered that a single motor in my Tamiya TXT-1 provided tolerable performance—not ideal, but tolerable. Specifically, I

found that one Trinity Monsters of Touring 17x2 motor, a stock pinion, a 3000 NiMH pack charged at 5 amps and an LRP F1 Pro Reverse provided acceptable performance in my TXT. I was surprised that your 16-turn setup didn't provide acceptable performance considering my experiences with an economical modified motor. Maybe you had a bum motor!

... then again, we may simply have a different concept of "acceptable" performance! Given Kev's experience with the Jug and yours with the TXT-1, maybe I'll give a one-motor setup another try. But after driving the TXT-1 with an EVX speed control and 14.4V power, it's tough to accept anything less.

—Pete

TAMIYA PICKED IT

Why didn't you guys test the Tamiya TA04 Pro and 414M as part of the December issue's "Pro Electric Touring Car Smackdown"? The TB Evo is a nice car, but I think the belt cars would have performed better. I don't know why you left them out. [email]

RALPH KOZO

To keep the size of the article manageable, we limited each manufacturer to one car. We asked Tamiya which car would best represent the brand in a performance-first shootout, and the TB Evolution was the choice.

—Pete

POP GOES THE LINKAGE

In the Kyosho QRC trucks "Track Test" (December 2001), you say "Hard landings caused the trucks' steering tie rods to pop off." Well, you must have just landed the Beetle off a jump when the photo in the upper right-hand side of the opening spread was shot, because the tie rod is hanging off! [email]

DON RICE

Right you are ... but the picture looks great! I think the link popped off when Kevin Rammed (get it?) the Beetle; check out the collision picture in the lower right corner.

—Pete

YOU SAID IT

"I'm glad Justin has a hobby that keeps him out of trouble."

As a newcomer to the RC scene, I just thought I'd drop you guys a note. Over the last year, my 10-year-old son, Justin, has been spending his allowance on RC Car Action. He's obsessed with RC trucks. I decided to help him get into his latest interest and bought him a used Team Losi truck. I went with a used truck just in case his RC interest was a passing thing; it's an older model but it runs, and he has decided to make a project of upgrading it. Justin insists that he wants to do the upgrades himself. He says that according to articles in your magazine, it seems as if he needs a new ESC. Can you suggest a good ESC for him that would take into consideration his limited budget? I want to help him, but he wants this to be his truck.

Since he has started to work on his truck, it seems as if a few of his friends have done the same, and now they race in the construction site behind our house. It's great to see. I'm glad that Justin and the other kids now have a hobby that teaches them some mechanical principles and keeps them out of trouble. I have you guys at RC Car Action to thank for this. Because your magazine has had such a positive influence on my son, I think I'll help him out and get him a subscription so he can save his allowance. Thanks again and keep up the good work.

PAUL ARAUJO (proud father)
Oshawa, Ontario Canada



Paul, when you wear that "World's Greatest Dad" T-shirt you got for Father's Day, you can take pride in the knowledge that you truly are one of the great ones (of course, my dad still holds the actual title). I appreciate all the kind words you gave us here at RC Car Action, but I think the real influence that makes Justin a son to be proud of who keeps out of trouble is his dad. Keep it up.

I think an XTM Sportsman is just what Justin needs. In fact, I'm sending one to you!

—Pete

WRITE TO US! We welcome your photos, drawings, comments and suggestions. Letters should be addressed to "Letters," Air Age Inc., Radio Control Car Action, 100 East Ridge, Ridgefield, CT 06877-4606 USA. Letters may be edited for clarity and brevity, and each must include a full name and address or telephone number so that the identity of the sender can be verified. We regret that, owing to the tremendous numbers of letters we receive, we can't respond to every one.

EMAIL ■ Peter Vieira: peter@airage.com ■ Derek Buono: derek@airage.com ■ Chris Chianelli: chris@airage.com ■ Bob Hastings: bobh@airage.com ■ Kevin Hetmanski: kevinh@airage.com ■ Steve Pond: stevep@airage.com ■ Greg Vogel: gregv@airage.com

BETTER THAN THE MOVIE PRO-LINE TVR SPEED SIX BODY

Hey; did you guys see "Swordfish"? Yeah; me neither. There's a chase scene that features the TVR Speed Six tearing it up around LA (at least, until John Travolta yanks the emergency brake, pulls a howitzer out of the trunk and starts blowing up Tahoes). "Citizen Kane" it ain't, but at least the car is cool. Here's an idea: get Pro-Line's TVR body for your RC car, grab your video camera, and make your own movie.

Pro-Line offers the shell in 190 and 200mm versions to fit any sedan. As usual, window masks, decals, wing and hardware are included. John Travolta with bad-haircut action figure not included.

Pro-Line (909) 849-9781;
www.pro-lineracing.com.



Trinity Matt Francis Glow Plug & Pinion Caddies

I sure hope Trinity includes comprehensive instruction manuals for these guys! The pinion and glow-plug caddies are machined from solid hunks of aluminum laser-etched with Matt Francis RC logos and anodized red (of course). Trinity (732) 635-1600; www.teamtrinity.com.

Pitting & Pulling OFNA Bearing Puller

Ever yanked the bearings out of an engine? It's a bear, isn't it? OFNA's neatly packed, well-made bearing-puller kit has everything you need to pop the bearings out of your .12 to .21 mill. Even if you never use it, you can just park it on your bench for the psych factor. It will make you look like such a serious nitro dude that the rest of the guys just might pack up and go home before the Mains rather than face you.

OFNA Racing (949) 586-2910; www.ofna.com.



O.S. TR .12 Engines

You're looking at the latest O.S. .12, which breaks away from the CZ/CV side-exhaust formula with a high-performance, round-port, rear-exhaust configuration. O.S. claims a 10 percent power increase over the CV-R and a peak output of 1.1hp, and the new crankcase is heavily webbed to prevent the crank-binding distortion that can afflict high-power engines. Slide- and rotary-valve TR engines in pilot- and threaded-shaft versions are available. All feature ABC construction, and each TR includes an O.S. Super 102 air filter and an A5 glow plug. O.S. Engines; distributed by Great Planes (800) 682-8948; www.osengines.com.



BALANCE OF POWER

TRINITY MATT FRANCIS TIRE BALANCER

Matt's ball-bearing balancer includes wheel weights and can be used with all types of on- and off-road 1/12- and 1/10-scale wheel and tire combos. You'd be surprised just how much smoother your car can feel (especially on smooth, hard tracks) when you run properly balanced tires.

Trinity (732) 635-1600; www.teamtrinity.com.





THREE-PRONGED ATTACK!

DYNAMITE TRITON BODIES



These are definitely different! The Triton is available in three versions to fit the Team Associated RC10GT, Team Losi Triple-XNT and Traxxas T-Maxx. The GT and Triple-XNT



versions are designed specifically for use with rear-exhaust engines; they provide additional clearance for the tuned pipe and header. T-Maxx owners get the convenience of molded-in wheel-well trim lines and body-post dimples. All three Tritons include window masks and decal sheets with headlight, taillight and grill details.

Dynamite (217) 355-9511; www.horizonhobby.com.

NEW FOLD

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Nitro Fuel Coolers

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TMF1002 Team Matt Francis Board \$38.99
1/4" Thick Cast Acrylic, Sturdy, Durable, Resistant To Most Light Weight For Easy Precision Laser Engraved Marks, Inch And Metric Measurements, NO STICKERS NEEDED Protective Foam Pad

Pit Box

OFNA



When you really have a ton of stuff to haul, this is the way to do it. OFNA offers this sturdy, nylon-clad carrier in two-box and three-box versions, and it has tough webbing handles and a heavy-duty zipper. The boxes are constructed of thick, industrial-strength cardboard, and dividers are provided for one box.

OFNA Racing (949) 586-2910; www.ofna.com.



Pocket armor? Sounds like sports equipment you'd use to protect your boys, but it's actually Kyosho's new line of micro tanks (I'd say they're about $\frac{1}{43}$ scale). The little belligerents are nicely weathered, full of detail and include mini transmitters with push-button control. You also get a tree of extra parts, including a plow, towhook, barrels, fuel tanks, storage packs and a figure to place behind the machine gun on the turret. And if taking aim at the cat isn't enough fun for you, Kyosho offers the Tactical Simulation Board, which I couldn't quite figure out because the text is in Japanese. It appears to be an RC version of "capture the flag." The tanks must maneuver around obstacles while avoiding "mines" that flip it if it runs over them. I think. When Kyosho gives us the translated instructions, I'll know for sure!

Kyosho Distributed by Great Planes; (800) 682-8948; www.kyosho.com.



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IT'S A SETUP!

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IF YOU CAN'T GET YOUR CAR DIALED IN WITH THESE DEVICES, IT'S TIME TO GO BACK TO SLOT CARS!



Speed Mind Universal Tweak Master

BALANCE-BEAM-STYLE tweak boards such as this one have been around for years, but the Speed Mind Tweak Master comes in colors!—blue, black and purple, to be exact. Now I must have one. The beauty isn't just anodizing deep; etched width-calibration marks, adjustable leveling feet, ball-bearing beams, a stainless-steel center shaft and a really sweet carrying case are all a standard part of the package.

Speed Mind Distributed by Magma Intl. (905) 305-9753; www.magmarc.com.

Trinity Matt Francis Precision Setup Board

THERE'S MORE GOING ON HERE than you might think. The cast-acrylic board is super-flat and laser-engraved with inch and millimeter markings, and a black foam pad makes it easy to read the markings while it also protects the board from being scratched. A heavy-gauge, resealable plastic storage bag keeps the board looking good between trips to the track.

Trinity (732) 635-1600; www.teamtrinity.com.



HUDY ULTIMATE SETUP SYSTEM

The Hudy Ultimate Touring Car Setup System includes all of Hudy's precision setup tools, including the chassis-support blocks, droop gauge, ride-height gauge, setup board and calibrated board decal. Of course, you also get Hudy's axle-mounted gauges for camber and toe. All the parts have previously been offered separately, but the Ultimate package puts them all in one box—and saves you a few bucks in the process. Hudy Distributed by Serpent USA (305) 639-9665; www.hudy.net.

Little Truck, Big Engine OFNA Pirate 10 Monster

"Little truck"? Well, the OFNA Pirate 10 Monster isn't really little; it's a full 1/10-scale machine. But it is smaller than the 1/8-scale rigs its Hyper .21 engine is usually found in, and that makes one hellacious power-to-weight ratio! OFNA offers this latest version of the Pirate 10 as an RTR, complete with Aitronics Blazer Sport radio system, glow-starter and painted body (as shown, or in blue or yellow), and there's even a bottle of Megatech fuel in the box! All the Pirate 10's standard features return in the "Monster" version, including fiber disc brake, full-time 4WD, CVA universal axles, aluminum shocks, metal-gear drive train and lots of red anodizing. OFNA Racing (949) 586-2910; www.ofna.com.



YOUR BEST BUILDS


**STAN MISCO, CLAY, NY
TRAXXAS
E-MAXX**

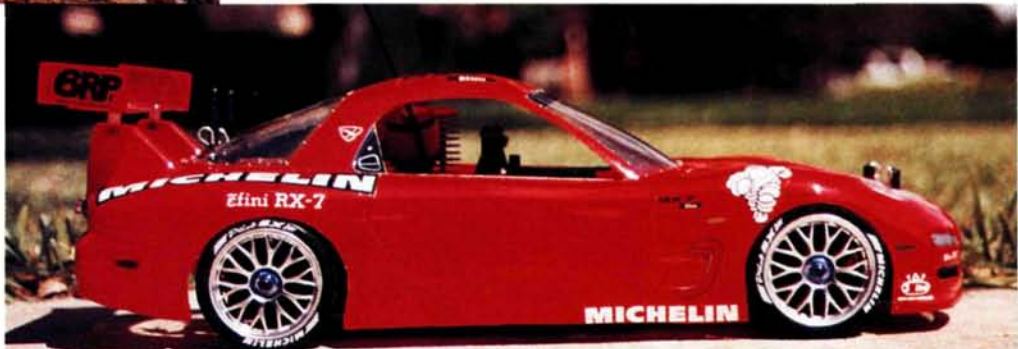
Stan's E-Maxx wears a Parma 41 Willys shell. It's amazing how a body can change the personality of a vehicle! Along with the purple aluminum components from Dynamite and the suspension arms from RPM, the "car" also sports a homemade wheelie bar and side pipes. Stan has painted five bodies for his E-Maxx and, not surprisingly, this is his favorite.


**STUART SNYDER,
GALVESTON, TX
TEAM ASSOCIATED
RC10GT RTR**

The biggest benefit to purchasing a ready-to-run truck is being able to take it out immediately and have fun. Instead, Stuart had fun by immediately taking his apart—sort of a ready-to-wrench version. What you see here is his finished effort, which includes extensive HG aluminum hardware, MIP titanium shock shafts and lite drives, shiny CVDs, 360-degree tuned pipe, 4-in-1 clutch and onboard temp gauge. Damping is aided by Progressive Shock reservoirs, and the truck is completed with a Pro-Line Dodge body, Road Rage tires and a set of RPM wheels.


**TOMAS SANTANA,
MAYAGÜEZ, PUERTO RICO
HPI RS4 RACER**

Tomas wanted to make his Civic look like a Type-R, and he did a good job! His Honda has an OPS .12 engine, HPI tuned pipe, 2-speed tranny and Futaba radio gear. We're told that the car is really fast on the track, in both drag racing and touring.


**TONY MARTINEZ, MCALLEN, TX
HPI NITRO RS4 RTR**

How do you know that your wife and daughter love you? They give you RC stuff for Father's Day! Incidentally, now is probably a good time to put in your Valentine's Day requests, too. This is Tony's first nitro vehicle—an HPI RS4 RTR with a Yokomo RX-7 body. His red racer is equipped with a 2-speed tranny, 12-fin heat-sink head, MIP CVDs and a Dynamite header and tuned pipe.

WIN A ONE-YEAR SUBSCRIPTION TO RADIO CONTROL CAR ACTION MAGAZINE!

Send a sharp, uncluttered, well-exposed color photo of your vehicle (no Polaroids) and a brief description to "Readers' Rides," *RC Car Action*, 100 East Ridge, Ridgefield, CT 06877-4606 USA. If we publish your photo, you'll receive a free, one-year subscription to *RC Car Action* and will be eligible to win the "Reader's Ride of the Year Contest." Write your address and phone number on your letter and on the back of every photo you send. Good luck!

**DAVID ANDREONE,
ORANGE PARK, FL
HPI SUPER
NITRO RS4**

David designed and painted this "cracked" paint scheme, and his touring car features plenty of purple on the chassis, too. Anodized hardware includes an Alien side belt tensioner and rear brace and Robinson drive pulleys. David installed Futaba radio gear with Hitec servos for the throttle and steering.

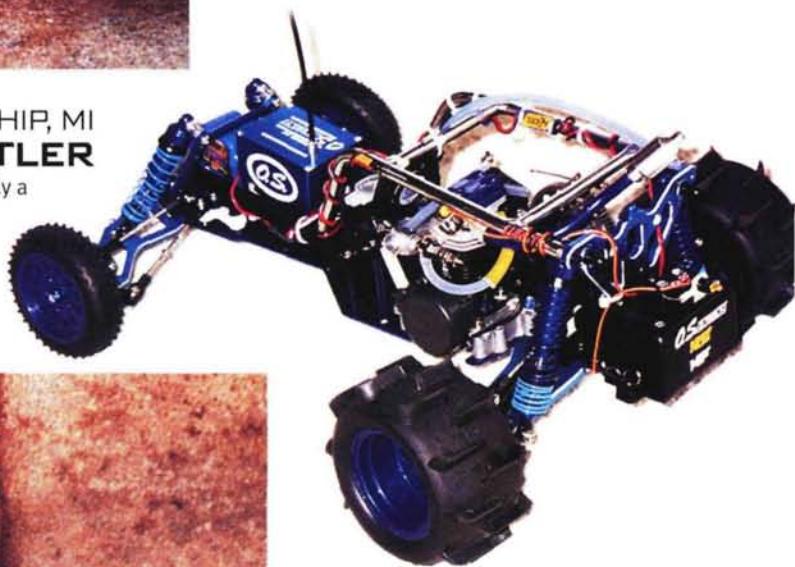


**ED ROBERTSON,
CARROLLTON, VA
SCHUMACHER .21 XT-R**

Ed says his hot rod has the "old-school look with today's power." Beneath the MRC 33 Ford body lies a Schumacher .21 XT-R, so you know this car can fly! The chassis rides on Pro-Line Road Rage tires, and Ed says he had to install a wheelie bar to prevent the car from going over backwards. Ed isn't going to stop there; he already has Schumacher's new 3-speed transmission on order.

**MIKE P., CLINTON TOWNSHIP, MI
TRAXXAS NITRO RUSTLER**

It took a while, but we finally figured out that this sand buggy is actually a 4-stroke Nitro Rustler in disguise. It took Mike about two months to finish his project, and along the way, he incorporated a few clever additions including a stainless-steel roll cage to protect the O.S. .26 engine, T-Maxx front and rear shocks, GPM aluminum arms and shock towers and a remote glow-igniter system.



**PETER BARCINA,
HONOLULU, HI
TEAM LOSI TRIPLE-XS**

Inspiration for paint jobs can come from many places; Peter's idea for his Triple-XS came from a motorcycle helmet. He figured that if it looked good on the brain bucket, it would look good on his touring car. He was right! Peter runs a Trinity P2k motor, a Novak Cyclone ESC and a Hitec Lynx FM radio beneath the Losi Stratus shell.

SPONSORED BY



HINTS, TRICKS, TIPS AND IDEAS FROM READERS LIKE YOU

**INSTANT GRAPHICS**

Here's an easy way to dress up simple paint jobs. Pick up some temporary body tattoos and apply them to the inside of your car body prior to painting. Once applied, the tattoo will be a permanent decoration.

*MICHAEL GEROLAGA
Santa Rosa, CA*

SNAG-FREE ANTENNA

If your receiver antenna often snags when removing your car's body, replace the antenna cap with a length of heat-shrink tubing so there are no exposed edges for the body to catch on.

*FREDRICK MOLZER
Shoreview, MN*

ADHESIVE REMOVAL

To remove adhesive residue left on your windows by the window masks, use a hair dryer to gently warm the adhesive; then blot the window with the sticky side of a piece of masking tape until the area is clean.

*BRANDON ROBERTS
Pittsfield, MA*

**ANTENNA KEEPER**

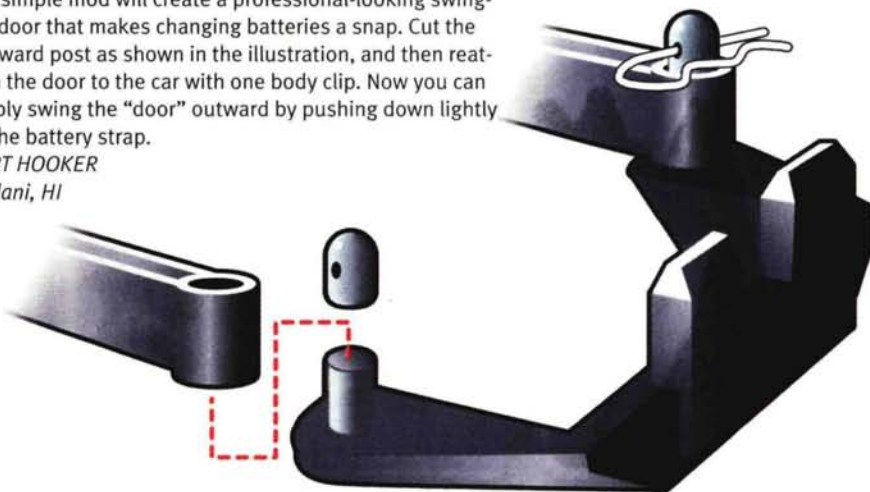
Prevent your antenna from pulling out of its mount with this simple modification: remove your antenna and drill a small hole in the antenna holder; then put a setscrew into the hole. Now you'll have a setscrew that will securely hold your antenna tube through all but the most severe tumbles.

*STEPHEN DORAK
Minneapolis, MN*

**TAMIYA F1 BATTERY DOOR**

Changing the battery in Tamiya's F1 cars can be awkward; this simple mod will create a professional-looking swing-out door that makes changing batteries a snap. Cut the rearward post as shown in the illustration, and then reattach the door to the car with one body clip. Now you can simply swing the "door" outward by pushing down lightly on the battery strap.

*BURT HOOKER
Mililani, HI*



WIN AN OFNA YO-YO, OFNA OB4 AND RC CAR ACTION SUBSCRIPTION! SEE NEXT PAGE FOR DETAILS.

IMPROVED MICRO RS4 HANDLING

You can improve the handling of your Micro RS4 by allowing the rear end to flex a bit more. Slot the lower chassis as shown, and the rear will flex like the pod on a pan car.

CARRIE QUINN
Wethersfield, CT



TC3 RALLY STEERING SHIELD

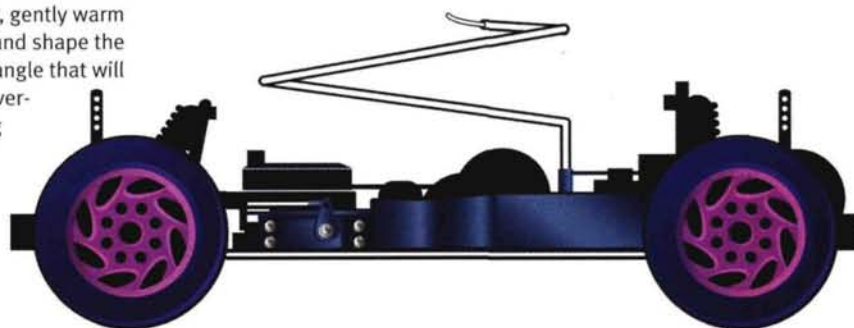
Sometimes the sliding steering linkage on a rally-converted TC3 can bind up from dirt entering the mechanism. Install a length of scrap Lexan over the steering link and use the top screws to hold the "shield" in place; this prevents binding up because of debris.

BILLY McGAHA
Kenner, LA

INTERNAL ANTENNA

To make an internal antenna holder, gently warm an antenna tube with a heat gun and shape the tubing into a small triangle or rectangle that will fit beneath the body. Leave a short vertical length at the end of the tubing so you have material to press into the existing antenna mount.

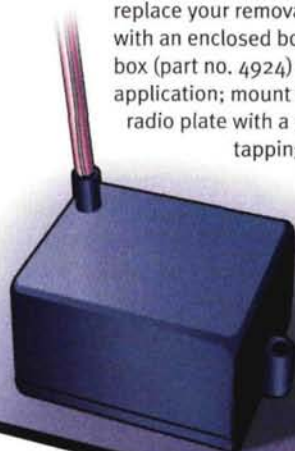
PAT WESTBURY
Providence, RI



ENCLOSED RADIO BOX

Protecting your stadium truck's electronics from off-road debris is easy. Simply replace your removable receiver mount with an enclosed box. The Traxxas T-Maxx box (part no. 4924) works well for this application; mount it on your existing radio plate with a pair of large self-tapping screws fastened from the inside of the box.

ANDREW
MOORE
Bridgeville, PA



TXT-1 SWAYBAR STAY

The TXT-1's stock swaybars are held on with zip-ties. For a more secure installation, use an automotive hose clamp. They're available in a variety of colors and provide a more finished appearance to your monster truck.

JAMES MOLLAINE
Haverhill, MA

"Pit Tips" are submitted by readers and are screened for functionality, feasibility and safety but are not tested by Radio Control Car Action. Radio Control Car Action and the submitting authors are not responsible for personal injury or damage to models or tools resulting from readers' use of "Pit Tips."

WIN AN OFNA YO-YO AND RC CAR ACTION SUBSCRIPTION! Radio Control Car Action will give a 6-month subscription (or extend an existing subscription) and an OFNA yo-yo to the author of each idea used in "Pit Tips." The "Top Tip" winners will also be considered for "Tip of the Year" to be selected at the end of each year. The "Tip of the Year" winner will receive an OFNA OB4 International RTR Electric car kit. Send a rough sketch to Bob Hastings, c/o Radio Control Car Action, 100 East Ridge, Ridgefield, CT 06877-4606 USA. BE SURE YOUR NAME AND ADDRESS ARE CLEARLY PRINTED ON EACH SKETCH, PHOTO AND NOTE YOU SUBMIT. We're unable to publish many good tips because we don't have the sender's name and address. Please note: because of the number of ideas we receive, we can neither acknowledge every one nor return unused material.

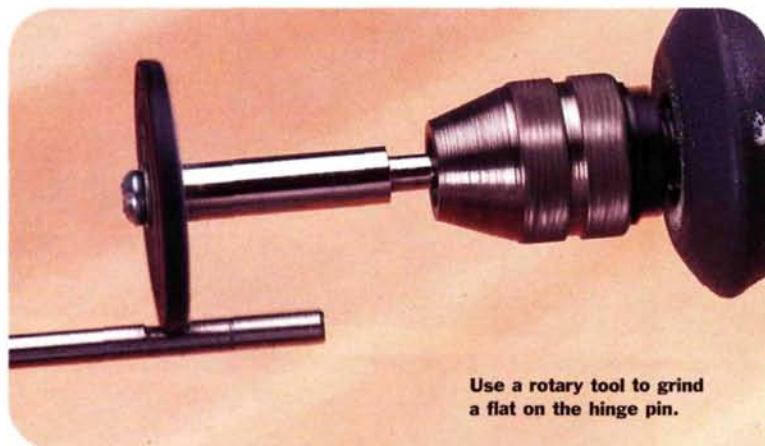
YOU'VE GOT PROBLEMS? WE'VE GOT FIXES.

HINGE PINS WON'T STAY PUT

My HPI RS4 Pro 3 has worked very well, but for some reason, the hinge pins that secure the front uprights and rear hub carriers keep loosening, and this causes the pin to slide over and scrape the inside of the wheel. All four wheels have deep scratches around the inner rim. I've tried to tighten the setscrews that retain the pins, but that doesn't seem to work. I've actually stripped the threads inside the front uprights from overtightening them. Are there any aftermarket suppliers that sell slightly longer hinge pins for the Pro 3 that can be held in place with E-clips?

Paul Quintanos

Tempe City, CA



Use a rotary tool to grind a flat on the hinge pin.



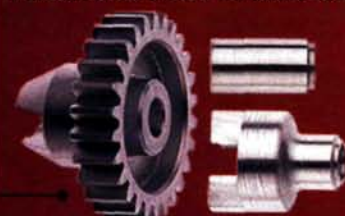
A drop of CA can restore a stripped setscrew hole.

I don't know of any aftermarket suppliers that sell longer hinge pins, but I do have a quick fix for your problem. Remove the outer hinge pins from the vehicle and then grind or file a flat spot on each hinge pin where the setscrew contacts it. The flat surface will allow the setscrews to hold the hinge pins in place more securely; just make sure the flat is lined up with the setscrew when you tighten it. With this mod, the hinge pin is captured and can't slide out, and this means the setscrew doesn't have to be cranked down super tight, which is what led to your stripping problem. You can fix the stripped front upright by applying a drop of CA to the hole that the setscrew threads

into. After the CA has dried, thread in the setscrew; new threads will be formed as you install it. Give it a try.

REAL PERFORMANCE PRODUCTS!**Traxxas Lightened Spur And Double-Disc™ Slipper Kits**

RRP's NEW line of Lightened Spur and Double-Disc Slipper Kits for Traxxas Nitro and T/E-Maxx trucks are designed to improve performance and increase reliability. This combo incorporates a machined steel or Super-Tough plastic spur, a Vented Aluminum Clutch-Plate/Gear Adaptor (small or large), 2 Slipper Pads and 2 Plates to deliver the adjustability you need and the increased performance that you demand. **Complete Slipper Kits** are available in the following sizes: RRP 8166 Slipper Kit with 66T Super-Tough plastic spur (Stock Size) for E-Maxx. RRP 8172 Slipper Kit with 72T Super-Tough plastic spur for Traxxas Nitro. RRP 8465 Slipper Kit with 65T Steel Spur for Traxxas Nitro. RRP 8472 Slipper Kit with 72T Steel Spur (Stock Size) for T-Maxx. Spurs, Clutch-Plate/Gear Adaptor and Slipper Pads also sold separately.

T-Maxx Forward ONLY Hardened Gear Kit

This kit contains a 26T hardened aluminum output gear, a forward drive hub adaptor and spacer. RRP 8585

Nitro and T/E-Maxx Accessory Spurs

A wide range of spurs fit our Double-Disc Slipper Kits. Choose from machined Super-Tough plastic spurs in 66, 68, 70, 72 and 76T sizes, RRP 82XX, or CNC machined steel spurs available in 65, 72 and 76T sizes, RRP 83XX. Small Clutch Plate/Gear Adaptor fits 65 thru 70T spurs. Large Clutch Plate/Gear Adaptor fits 72 thru 76T spurs.

Traxxas Nitro Hardened Steel Clutchbells

CNC Machined from solid steel these bells are built to last. They take the 5x11 bearing (NOT included). Available in 19T, RRP 8119, 20T RRP 8120, 21T RRP 8121 and 23T RRP 8123.

T-Maxx Hardened Forward Primary Gear

Machined from solid aluminum and hard coated. A direct replacement for the stock gear. RRP 8528

48P Absolute Series Pinions

Super hard, lightened and cut with unmatched precision. Great with any spur, but with an Absolute spur, even on-off noise is gone! Available in 48P in 16T thru 28T sizes. RRP 1416 - RRP 1428.

48P / 64P SuperLite Aluminum Pinions

They're lightened, hard coated and precision cut. Available in 48P in 16T thru 28T, and 64P in 24T thru 38T. RRP 30XX (48P) and RRP 31XX (64P). Only \$5.25

48P Hard Nickel Plated Steel Pinions

These precision cut gears have an extremely hard coating that makes them really last. Available in 12T thru 35T. RRP 1012 - RRP 1035

Make No Compromises.

www.robinsonracing.com

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RRP
ROBINSON RACING PRODUCTS

TWEAKED MICRO RS4

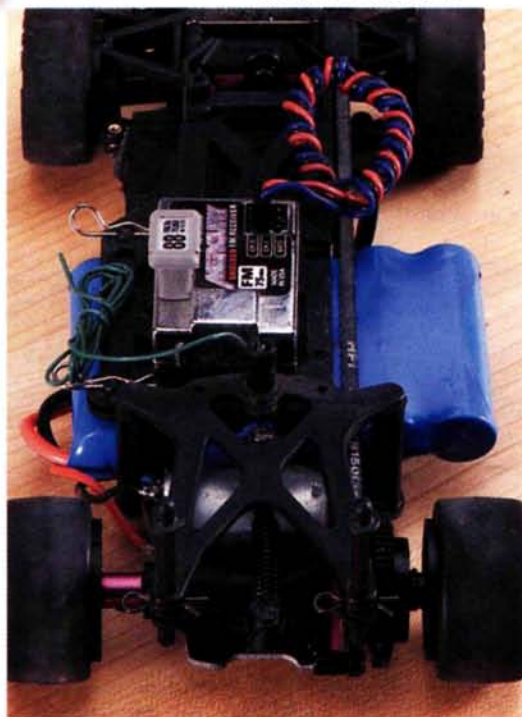
I own a Micro RS4 that's set up with an LRP Quantum Pro reverse, a Hitec Shredder 2-channel micro receiver, a Hitec HS-303 steering servo and a Team Orion 6V, 1100mAh NiMH battery pack that I taped directly to the lower chassis plate. The battery pack is centered on the chassis directly behind the steering servo. I control the car with a Hitec Lynx AM radio. For some reason, the car always spins out when I make right turns under power. It steers perfectly to the left, though. I have repositioned the servo many times to make sure that the servo provides equal throw in both directions and that the front suspension does not bind when turning. The only way I can keep the car from spinning out is by limiting servo travel with the steering dual-rate function on my transmitter, but then the car pushes badly when I make left turns. I'm at a total loss here. What can I do to correct this problem? [email] Doug Meyer

It sounds to me as if you have a tweaked chassis. The only way to adjust chassis tweak on the Micro RS4 is by properly balancing all of the electronics on the chassis. My guess is that you have mounted the battery pack on the lower chassis plate so that the fifth cell that's shrink-wrapped to the side of the battery pack is hanging off the left side of the chassis. The weight of the fifth cell, along with the weight of the standard servo and the motor (both mounted offset to the left), is causing your chassis to list slightly to the left.

Install the battery pack so that the fifth cell hangs off the right side of the chassis instead. This will help to balance the weight of the offset motor and servo. You may have to remove the shrink-wrap from the battery pack to provide drive-belt clearance. You can also mount the battery pack to the optional battery holder exactly as recommended in the instruction manual, which will also position the battery pack with most of its weight on the right side of the chassis. Mount your ESC and receiver directly on the centerline of the molded upper deck to ensure that the weight of these components does not affect chassis tweak. This should resolve your chassis-tweak problem.



To adjust the weight bias of a 5-cell micro RS4, offset the pack to the right.



NEW T-Maxx Steel Diff Gear Set



T-Maxx / E-Maxx differential gear set, includes: 1 beveled pinion gear, 1 beveled spur gear, 4 re-usable stainless steel Phillips head screws, 1 tube Associated Black Grease, and a shim kit for spider gears with 10 .003" shims. 2 sets needed per truck. RRP \$590

NEW T-Maxx Aluminum High Performance Brake Kit



New, lightweight aluminum high performance brake kit, includes bigger, more aggressive brake pads and steel backing plates. One piece vented rotor minimizes side-to-side wobble. RRP \$560

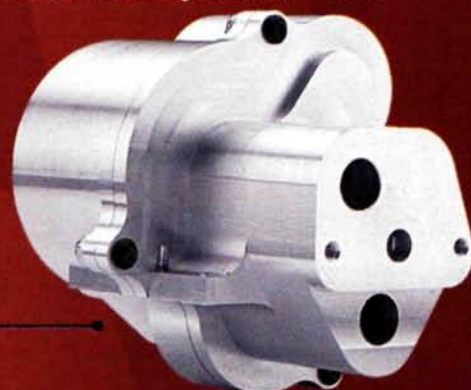
www.robinsonracing.com

T-Maxx Vented Flywheels



Aluminum vented flywheels move air over clutch bell, improving performance and cooling. RRP \$551 Blue, RRP \$550 Natural Silver

Forward ONLY Racing Gearbox For T-Maxx



Precision CNC machined from aircraft grade billet aluminum this Forward ONLY Racing Gearbox will give your T-Maxx a serious competitive edge. RRP \$595

ROBINSON RACING PRODUCTS

4968 Meadow View Drive - Mariposa, CA 95338 - Voice 209.966.2465 - Fax 209.966.5937

E-MAXX GEAR TROUBLES

I have a Traxxas E-Maxx that keeps stripping spur gears. I replaced the stock motors with Trinity Monster Maxx motors and the stock 68-tooth spur gear with a larger, 72-tooth spur gear. To make the truck easier to drive, I also have the tranny locked into second gear. Every time I run the truck, I end up stripping the spur gear. The motor-mounting screws are super tight, as is the slipper clutch, so what gives? I thought the E-Maxx was supposed to be able to handle powerful motors. [email]

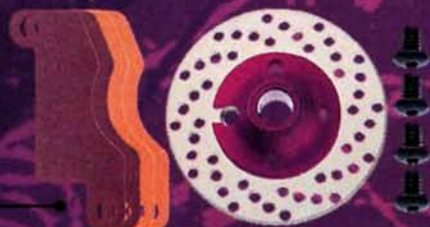
Mark Bucklee



Torque it! Tighten the T-Maxx slipper fully to avoid roasting spur gears.

Mark, the E-Maxx can handle just about any motor combo you can bolt onto it as long as it's geared correctly, and the slipper clutch is locked. I know a guy who had the same problem. I looked at his truck and discovered that his spur gear was stripped, but I also noticed that the gear had melted around the holes that house the slipper-clutch pegs. This is an unmistakable sign of a loose slipper clutch; the heat caused by excess friction melted the spur gear. The slipper clutch appeared to be tight, but I was able to crank the slipper-clutch adjustment nut down even farther; enough, apparently, to solve his stripping problem once and for all. The slipper clutch is kind of difficult to tighten completely because the ESC prevents you from getting a good grip on the box wrench. You really need to crank down on the slipper-clutch adjustment nut—with both hands, if necessary—to properly tighten the slipper clutch. Give it a shot.

RS4 Nitro Aluminum Brake Kit



Lightweight aluminum, variable braking system. RRP 1575

RS4 Nitro Vented Flywheel



Aluminum vented flywheels move air over clutch bell, improving performance and cooling.
RRP 1570
RRP 1571 Pull Start

Stealth Sedan Spurs



These precision machined spur gears are super quiet. They're available in 48P in 60T thru 96T sizes, and fit any HPI electric car or truck.
RRP 1860 thru
RRP 1896

RS4 Nitro Small Aluminum Drive Pulleys



Hardened drive pulleys, sold in pairs.
RRP 1538

RS4 Top Shaft Pulley



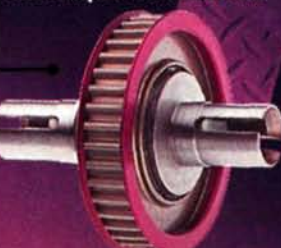
One piece pulley and shaft are precision cut and hard anodized. Purple anodized side flanges are pressed on. RRP 1527

RS4 / Pro / Pro2 / Nitro Aluminum Outdrives



40% lighter than stock ball diff outdrives. RRP 1585

RS4 Complete Ball Diff Units



Hardened steel outdrives, ground and polished thrust washers, 2 5x8mm ball bearings, and aluminum pulley.
RRP 1590 Electric
RRP 1595 Nitro

RS4 Diff Pulleys



Precision machined, hard anodized aluminum diff pulleys.
RRP 1539 nitro sedans
RRP 1528 electric sedans

RS4 Nitro Lightened Gear Adapter



This lightened gear adapter includes a machined nylon spur that's tougher than the stock gear and will last longer.
RRP 1535

www.robinsonracing.com

By flaring the pipe, the coupler can get a better "bite."

RUNAWAY TUNED PIPE

I have a Tamiya TG10 with the optional tuned pipe and 180-degree manifold. My problem is that the tuned pipe scrapes on the track and eventually falls off in the middle of the run. I have the pipe secured with four tie-wraps, and it still falls off. What can I do to prevent the pipe from coming loose during a race?

Robert Tsu
Canoga Park, CA

First, raise the tuned pipe by bending the pipe hanger. It's OK if the pipe leans upward, toward the front of the chassis; just mount it so that it is slightly above chassis level and does not scrape on the track surface. Slightly flare the tuned-pipe inlet to prevent the pipe from separating from the coupler during a crash. To do this, insert the tip of a screwdriver into the tuned-pipe inlet and roll it around the edge of the inlet as you apply pressure to the pipe wall to form a small lip. For extra insurance, you can also flare the end of the exhaust manifold. After you've installed the coupler and a couple of tie-wraps, you should have an exhaust system that won't fall apart in the heat of battle. ■

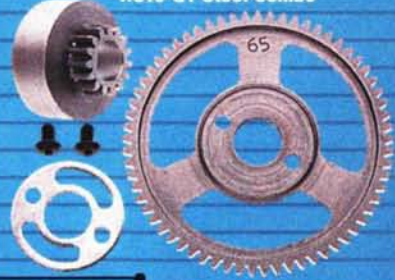
TOOLBOX

You aren't still snipping parts from their trees with diagonal cutters and then slicing off the leftover nub with a hobby knife, are you? You can avoid that tedium with a pair of sharp flush cutters (AKA side cutters), which neatly snips the part from its tree without leaving any waste behind. Tamiya makes the best pair; its Sharp Point model has very pointed jaws that easily nip tiny bits of waste plastic away from tight areas, and the razor-sharp jaw blades make super-clean cuts that require no additional finishing.

Tamiya Sharp Point Side Cutter—part no. 74035, \$25.

Tamiya America Inc., (800) 826-4922; www.tamiyausa.com.

RC10-GT Steel Combo



Precision machined from solid steel, then hardened, this 65T spur and 15T bell combo will last and last. The extra-hardened clutch bell fits ALL Associated and MIP shoes. RRP 2365

www.robinsonracing.com

Hardened Steel Idler Gear



Cut from solid steel stock, this gear is lightened and hardened for super quiet precision and extra long life. Jammin' tranny grease is included. RRP 2213 RC10-GT, RRP 7505 Ultima GP-R

Associated Titanium Stealth Top Shaft



CNC Machined from solid titanium, this super hard, super light top shaft will fit any Stealth transmission. RRP 1512.

Hardened Diff Gear



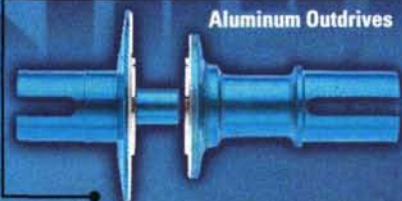
Hard anodized, precision CNC machined aluminum diff gear. RRP 1513 RC10-GT RRP 7500 Ultima GP/EP-R

Blue Lightened Slipper Kit



The rear plate is hard anodized and the front plate is color treated. The front plate holds the pad forcing it to slip on the rear plate. When pad wears, just flip it over for a new surface. RRP 1515 Associated, RRP 7515 Kyosho Ultima

Aluminum Outdrives



40% lighter than stock ball diff outdrives. RRP 1475 TC3, RRP 1502 B3/T3

TC3 Ultra 48 Pitch Spurs



Precision machined from heat-resistant plastic, these spurs mesh flawlessly with our pinions. Available in even numbers from 70T thru 80T, RRP 1670 RRP 1680.

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MEGA



Kyosho gets ready for a Maxx attack!

KYOSHO CAN BE CREDITED

with producing RC's first nitro-powered "big truck," the still popular Nitro USA-1. The .21-powered monster version of the Burns racing buggy (which later became the Inferno) was a colossal hit in the most literal sense, and it represented the state of the art in large-scale, nitro-burning monsters. Since then, Kyosho hasn't stepped up with a replacement for the aging USA-1, despite competition from OFNA (Monster Pirate, Monster Blazer) and the category's giant-killer, the Traxxas T-Maxx—not to mention new upstarts such as the DuraTrax Thunder Quake and Thunder Tiger EK-4.

All that is about to change now that the MegaForce is (almost) here. The new truck is not a buggy-based machine like the original Nitro USA-1 or the OFNA, DuraTrax, or Thunder Tiger machines but instead is a high-ground-clearance, meant-to-be-a-monster design that appears ready to infiltrate T-Maxx territory. Here's what's under the hood.

KYOSHO FORCE

GS15R ENGINE WITH TUNED EXHAUST.

This dual-bearing, single-needle mill is the standard engine for just about all of Kyosho's nitro vehicles.

The proto truck sports a short cooling head; we hope the production trucks will have a full-size head, as the GS15R will be working hard.

2MM ALUMINUM MAIN CHASSIS. The MegaForce's stamped chassis features radiused sides for extra stiffness and receives additional support from plastic braces on its underside.



SHAFT-DRIVEN 4WD. Like the QRC trucks that preceded it, the MegaForce's tranny pokes through the chassis to meet a pair of steel dogbone axles beneath it. The axles spin gear differentials via cast ring and pinion gears. Production specs may change, but the prototype truck's diffs and their enclosures appear to be the same parts as are used on Kyosho's QRC and SuperTen series.

ENCLOSED RADIO BOX. The receiver and its battery pack are hidden away in a two-compartment box on the left side of the chassis. Hinged lids allow easy access to the gear when it's time for fresh batteries.

CHROME WHEELS AND CHEVRON TIRES.

Muscular rolling stock is a monster-truck must, and the MegaForce's hoops are eye-catchers with their bright chrome finish. The factory-glued chevron tires are suitably massive and feature a traditional bar-tread pattern instead of the bar/lug combo Kyosho uses on some of its smaller trucks. Thanks to firm compound, thick-walled construction, the tires support themselves well without inserts.



QRC TRANSMISSION WITH SLIPPER CLUTCH. The QRC tranny has been reconfigured for MegaForce duty and is now fully enclosed to keep dirt at bay. A disc brake is built into the transmission, but it isn't active unless you install a 3-channel radio system (or disable the reverse capability and hook up the brake instead). The slipper clutch is a welcome feature and will keep the MegaForce rolling through big hits that might otherwise eat up tranny gears.

COMPLETE BEARING SET. If it spins, it spins on metal-shielded ball bearings. The only bushed parts are the MegaForce's steering bellcranks.

HINGE-PIN SUSPENSION. Kyosho went with tried-and-true hinge pins for suspension articulation instead of pivot balls, but the MegaForce has adjustability similar to a pivot-ball system's, thanks to the use of steering arms and O-carriers on both ends. Up front, the arms steer the truck (of course), while adjustable links in the rear allow toe-in to be set by altering the angle of the arms.



EIGHT SHOCKS. A pair of plastic-body oil shocks equips each corner of the MegaForce; the shocks use clip-on spacers to adjust spring preload. Gold-anodized aluminum caps put the clamp on internal volume-compensation blades and resist peeling away from the shocks when subjected to big hits.



MEGAFORCE VS. T-MAXX

There's no way the MegaForce will be able to avoid direct comparisons with the Traxxas T-Maxx, so why fight it? We couldn't run the proto-photo truck for a head-to-head test session (don't worry, it will happen later), but we do have a tale-of-the-tape to get the Internet bulletin board chatter going.

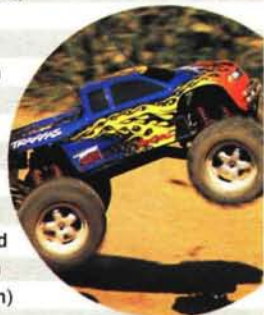
KYOSHO MEGAFORCE

TRAXXAS T-MAXX

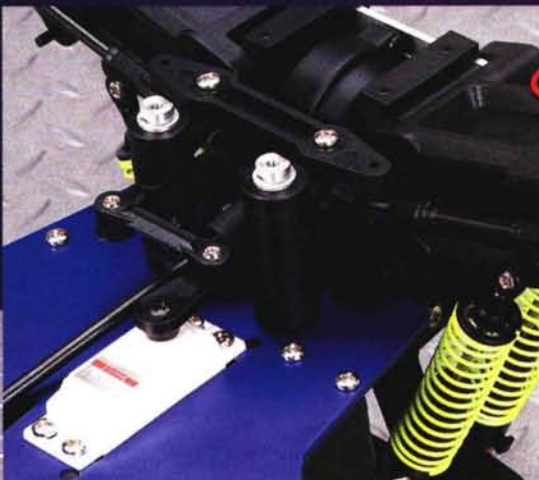
Overall length	19 in. (480mm)	18.87 in. (479.29mm)
Width	14.5 in. (368.3mm)	14.8 in. (375mm)
Wheelbase	12.25 in. (311.15mm)	12 in. (305mm)
Max. ground clearance	3.75 in. (95.25mm)	3.75 in. (95.25mm)
Weight (dry)	149.76 oz. (4,245g)	137.6 oz. (3,900g)
Displacement	.15	.15
Starting system	Electric	Electric
Bearings	Ball bearings	Ball bearings
Exhaust	Cast tuned pipe	Plastic tuned pipe
Shocks	Plastic-body, oil-filled	Plastic-body, oil-filled
Tire width	3.12 in. (79.24mm)	3.34 in. (84.83mm)
Tire height	6.5 in. (165.1mm)	5.85 in. (148.59mm)
Wheel dimensions (WxD)	3x3.56 in.	2.22x3.41 in.
Arm length*	2.68 in. (68.07mm)	5.2 in. (132.18mm)
Hinge-pin spread**	1.3 in. (33.02mm)	1.32 in. (33.9mm)
Suspension travel	2.75 in. (69.85mm)	3.76 in. (95.50mm)

*Measured from center of inboard hinge pin to center of outboard hinge pin/pivot ball.

**Distance between inboard suspension hinge pins.



STEERING SERVO. This hangs beneath the chassis to grab the bell-crank steering system. Note the thick, bushed drag link and large-diameter bell-crank posts.



TOUCH-STARTING. Think of this as push-button starting—minus the push-button. Kyosho debuted Touch-Starting on the latest Quick Reverse Clutch (QRC) trucks (reviewed in the December 2001 issue of *Radio Control Car Action*), and it's pure simplicity; a starting jack (that looks suspiciously like an RCA plug) is servo-taped and strapped to a 6-cell stick pack. Plugging the jack into a receptacle between the MegaForce's rear body posts simultaneously cranks the engine and heats the glow plug, and as long as you have fuel in the tank, the MegaForce will fire up.



NOW ALL WE HAVE TO DO IS DRIVE ONE!

The MegaForce that modeled for the camera was the last mock-up before production. It wasn't an actual runner, so we'll have to wait for a production MegaForce before we can make a performance call. (I'll let you in on a little secret: we pulled the MegaForce with a string to get the action shots.) But the new parts are of Kyosho's usual quality, and the parts that have seen duty on other Kyosho vehicles are known to be tough. The suspension feels right, the truck looks good; we think it's gonna work! And as soon as we get a MegaForce we can drive, we'll know for sure.

SOURCE GUIDE

KYOSHO Distributed by Great Planes; (800) 682-8948; www.kyosho.com



Trinity Reflex

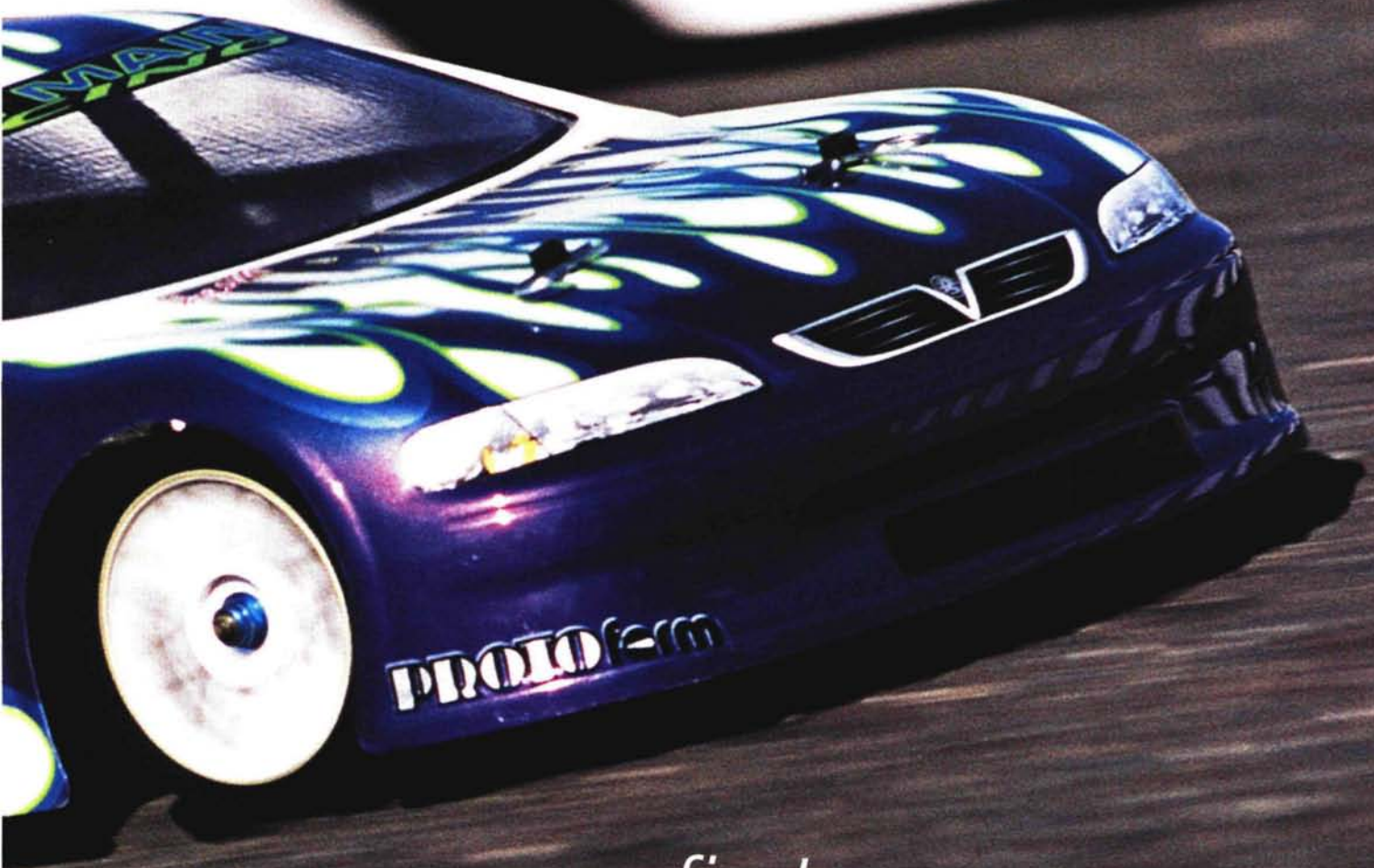
the track and look good doing it. To ensure the car's success, Trinity even added some "magic" to the box: Joel "Magic" Johnson is back as captain of the Team Trinity nitro racing squad and part of the RNT's continuing development. Recently, I got the chance to wring out a final production car, while Joel got in some laps with his own Reflex.

"BUILD AND WIN" IS A FAIRLY BOLD STATEMENT to put on a kit box, but Trinity is confident that its first nitro sedan—the Reflex NT (RNT)—has all the right stuff to make it to the winners' circle. In true "works" style, the RNT is packed with exotic goodies to help the car perform well on



If you're wondering who Joel Johnson is, let me say this: "Welcome to the hobby." You must be new if you don't recognize Joel "Magic" Johnson, a dominant force in RC racing since his first Nats victory in 1981 all the way up to his "retirement" in 2000. During his career, Joel won no fewer than 33 ROAR national titles behind the wheel of everything from 1/12-scale cars and oval machines (dirt and pavement!) to touring cars and even off-road buggies. Joel even won the IFMAR 2WD Off-Road World Championship in 1987. Now "The Magic Man" is back, and he's driving the Trinity Reflex NT. I cornered the living legend (who is really just a down-to-earth RC guy like you and me) to talk about RC past and present, as well as his return to world-class RC racing as the captain of Trinity's nitro on-road racing team.

THE "MAGIC" RETURNS



Is Trinity's *first* nitro tourer the *best* nitro tourer?

RADIO CONTROL CAR

ACTION: Do you think that RC equipment or drivers' skills have improved since you left racing?

Joel Johnson: From what I can see, all the usual suspects are still racing, plus a couple of new faces, so I suspect that the level of competition is where it was when I left. The equipment looks to have improved significantly in regard to motors, batteries and chassis.

RCCA: What are your feelings on nitro, and what are your goals as the Trinity nitro team captain?

JJ: I look at nitro as a new challenge for me. I've enjoyed racing

nitro cars in the past, and I hope to take that experience and help Trinity build a topnotch presence on the track in the market.

RCCA: Do you think it will be difficult to transition to nitro after racing electric for so long?

JJ: The transition to nitro won't be easy. The most difficult part about transitioning to nitro is learning engine and clutch tuning. The clutch can really affect the handling of the car and the tune of the motor. Otherwise, tuning the chassis and driving are very similar to electric.

RCCA: I enjoyed driving the Reflex NT. What are your thoughts on the car?

JJ: I couldn't be more impressed with the new Reflex. Right out of the box, the car really handles well. The design and building qualities are exceptional, and the kit comes with 99 percent of all the "hop-up" parts a hardcore racer wants. Overall, I think Trinity really hit one out of the park with the Reflex. This kit is a real departure from Trinity cars of the past, and I congratulate them on producing a world-class nitro touring kit.

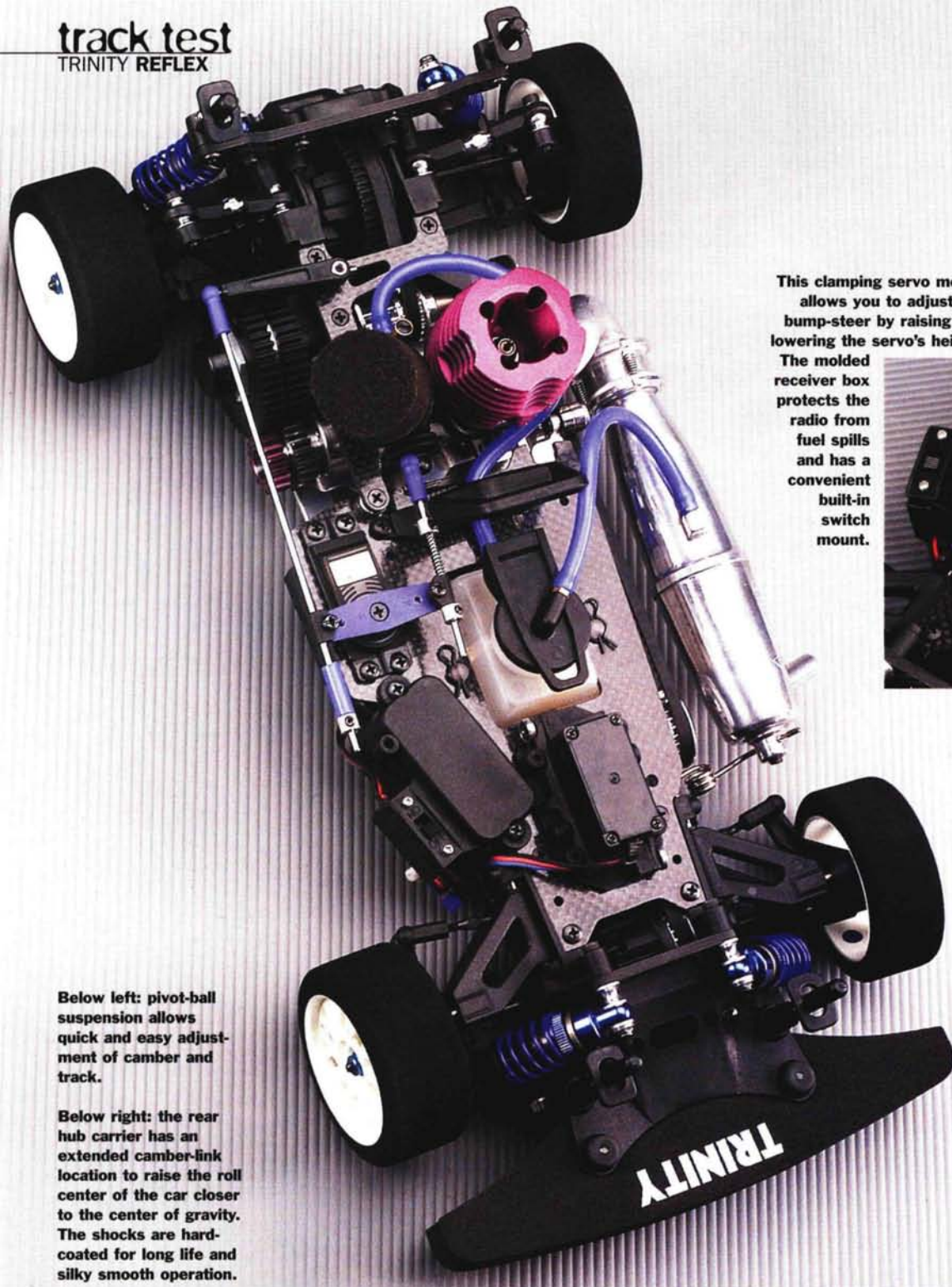
RCCA: Is there a spot for me on the team?

JJ: Well, I think we'll have to have another test to determine whether you were stress-testing the car for the write-up or were just having a bad day!

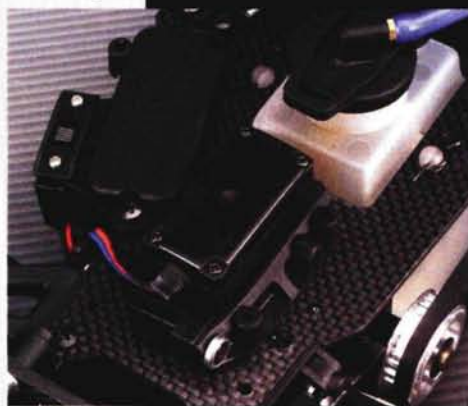
RCCA: Are you coming back to racing full time, and will you also be racing electric?

JJ: My racing plans for the future are fluid right now. I do miss racing, but I don't miss the travel and time away from home. If I did come back to racing, it would be on a limited schedule for nitro events and an occasional electric race. To truly be competitive on a world level, a driver needs to devote all of his time to practicing and preparing equipment. At this stage, I don't have the time or the fire inside to return to that.

Sure Joel...we'll see about that "fire" thing!



This clamping servo mount allows you to adjust the bump-steer by raising and lowering the servo's height. The molded receiver box protects the radio from fuel spills and has a convenient built-in switch mount.



Below left: pivot-ball suspension allows quick and easy adjustment of camber and track.

Below right: the rear hub carrier has an extended camber-link location to raise the roll center of the car closer to the center of gravity. The shocks are hard-coated for long life and silky smooth operation.



DATA CENTER

VEHICLE TYPE 1/10-scale, competition nitro touring car

BEST BUYER Competition racer

KIT RATINGS (poor, satisfactory, good, very good, excellent)
Instructions Not complete at time of review

Parts fit and finish Very good

Durability Very good

Overall performance Excellent

SPECIFICATIONS

MANUFACTURER Trinity

MODEL Reflex NT

SCALE 1/10

STREET PRICE \$399

DIMENSIONS

Wheelbase 10.52 in. (263mm)

Width 7.96 in. (199mm)

WEIGHT

Total, as tested 62.5 oz. (1,772g)

CHASSIS

Type 4mm machined plate

Material 7075 aluminum main chassis with graphite upper deck

DRIVE TRAIN

Type Triple-belt 4WD

Primary 17T/21T pinion/46T/49T spur

Primary drive ratio 2.52:1

Final drive ratio (1st/2nd) 6.81:1/5.87:1

Drive shafts Universal CV axles

Differentials Sealed gear diffs
Bearing type Metal-shielded ball bearings

SUSPENSION

Type (F/R) Pivot-ball upper and lower A-arms/pivot-ball lower

H-arm with adjustable upper link

Shocks Hard-coated aluminum, threaded-body

WHEELS

Type TRC split-spoke

TIRES

Type TRC foam; double-purple front, magenta rear

A CONVENTIONAL TRIPLE-BELT DRIVE TRAIN WITH A HARD-COATED LAYSHAFT DELIVERS POWER TO THE DIFFS. PULLEYS ARE MACHINED FROM ALUMINUM TO ENSURE TRUENESS AND EXTEND WEAR.

KIT FEATURES

CHASSIS. Trinity spec'd a 4mm aluminum chassis for the Reflex NT's base. Large openings machined around the diffs reduce weight and allow debris to exit the chassis. To further reduce weight without sacrificing stiffness, other chassis areas are relieved but not cut all the way through. Beveled slots beneath the engine direct airflow up to the block. Just how much additional cooling this provides is open to debate, but it shows Trinity's desire to pack any performance-enhancing feature it can between the bumpers, whether the potential benefit is large or small. A more functional detail is the carbon-fiber battery tray that holds the receiver pack in the chassis' center to reduce its polar moment. This position effectively buries



Here's a good view of the angled cooling slots beneath the motor mount. The intent is to direct cool air upward. You can see the machine work in the chassis; the beveled edges reduce the chance of the chassis dragging around hard corners. The

receiver pack is taped to the carbon-fiber battery tray. Remove two screws, and the battery drops out for charging and maintenance.

the pack in the car, making access difficult, but Trinity skirts the problem by allowing the battery tray to drop out from beneath the chassis by removing just two screws.

A graphite upper deck centers the fuel tank and the steering servo in the chassis; this prevents the servo's mass and the variable level of fuel in the tank from affecting the car's tweak. The upper deck and transmission braces are cut from 3mm graphite plate. That's thicker stuff than commonly found in $\frac{1}{10}$ nitro tourers, and when combined with the 4mm main chassis, it results in a car that's stiffer than Shaquille O'Neal's acting.

DRIVE TRAIN. A conventional triple-belt drive train with a hard-coated layshaft delivers power to the diffs. Pulleys are machined from aluminum to ensure trueness and extend wear. Sealed, silicone-filled gear differentials are installed on both ends of the car, and diff fluids in three viscosities—400, 800 and super-thick 50,000WT—are included. The instructions

explain how to blend them to create "in-between" viscosities.

A single vented disc brake with replaceable pads on the steel calipers stops the car. The steel disc rides on pins that are pressed into a thick aluminum brake hub, and a long brake actuator transfers brake inputs from the servo to the caliper.

The RNT includes a 3-shoe clutch. The clutch bell is machined from steel and uses thread-on pinion gears. A larger bearing inside the clutch bell helps to handle the loads and temperature extremes of racing with 1+hp engines. The clutch spools up the RNT's standard 2-speed, which relies on a centrifugal clutch of its own to engage second gear. The force at which the clutch engages can be adjusted independently from the shift point (a feature that can be used to reduce the jolt of power that is transferred to the wheels when the engine shifts). This allows better control when a shift occurs in a corner and a hard gear change could cause the car to lose traction.

Steel CV-style axles are found at both ends, and plastic drive hexes connect the axles to the wheels. All of the RNT's drive-train parts spin on shielded ball bearings.

SUSPENSION AND STEERING. The RNT sports a highly adjustable front and rear pivot-ball suspension. The pivot balls have composite centers surrounded by aluminum; Trinity claims that this prevents the suspension from binding by giving the hub carriers a composite plastic surface to ride on. The front suspension has adjustable camber via the pivot-ball suspension and steel turnbuckles tie rods to adjust toe.

The rear pivot-ball suspension allows adjustment of toe and track, and an upper turnbuckle adjusts camber. High-rise camber-link positions on the rear hub carriers raise the car's roll center closer to its center of gravity, which is typically higher in nitro cars.

Bump-steer is adjusted by altering the height of the steering servo in the upper deck. Don't worry; it isn't a long-screws-and-washers type of thing. The RNT has a clamping servo mount that allows the servo's height to be adjusted by loosening two screws. If you're skeptical, install the included conventional servo mounts.

Hard-coated, threaded-body aluminum shocks suspend the RNT and feature bottom-loaded double O-ring seals and 9-pound springs. Trinity includes its own 80 and 40WT silicone shock fluids.

ENGINE AND ACCESSORIES. The RNT fuel tank is among the best. Its unique cap has a molded-silicone seal instead of a single O-ring seal around the lid, and that keeps the fuel and pressure inside. That may not sound exciting, but a tightly sealed tank provides consistent tank pressure to make the engine run more reliably. It also keeps the chassis cleaner by preventing fuel from vibrating out of the tank. Fuel tubing is included.

The RNT does not include an engine, manifold or pipe, but Trinity does offer

BUILDING & SETUP TIPS

The Reflex NT I tested was one of the first five production kits to be assembled by the quality control guys at Trinity, and I was assured that the kit was built with stock springs and fluids and the standard settings (to be provided by the as-yet-unfinished manual). I can't comment on building the kit or the quality of its instructions, but I can offer some advice based on my experience with the Reflex NT.

TRIM THE AXLES. It wasn't obvious until I brushed a few boards that the axles protrude slightly beyond the edges of the rims. This could cause a problem if you are a board-rider, as the axles can catch and pull the car into the boards, leading to a crash and the potential for breakage. To fix this, cut a few threads off the end of the each axle so it is flush with the top of the axle nut.

WATCH THE WIRES. The servo leads exit the receiver box close to the chassis, and if you're not careful with their routing, they may scrape the pavement and become damaged (bad) or be severed (very bad).

BUMP-STEER SETTING. To achieve the optimum bump-steer setting, Joel Johnson recommends putting the ball studs on the servo-saver pointing downward, with the servo all the way at the top of the upper deck.

RECEIVER PACK. Get a 3x2 pack. It's the best fit on the RNT's drop-out tray. Flat packs are too big.

YOU OUGHTA KNOW: Thread-lock the screws that thread into the RNT's many aluminum parts. Feel free to skip this step if you like your nitro cars to leave trails of parts like Speed Buggy.

YOU'LL NEED

- Bump-start .12 or .15 engine
- Tuned pipe
- Exhaust manifold
- Transmitter and receiver
- Throttle and steering servos
- Receiver battery
- Fuel
- Starter box
- 200mm body
- Thread-lock

Trinity Monster Horsepower 25-percent-nitro fuel

Trinity claims that using

Monster Horsepower fuel will give you faster starting, broader needle settings, smoother midrange and even prevent rust. Can an infomercial be far behind? Trinity fuel was voted "Readers' Choice" in 2001, and I have used Monster Horsepower fuel with good results.

Other items used in testing:



Airtronics M8 transmitter

Novak XXtra receiver

Trinity Nitro Metal Hydride receiver pack

Airtronics 94357 steering servo

Airtronics 94358 throttle servo

Mugen MT-12 rear-exhaust engine

Serpent 2690 tuned pipe and manifold

Pro-Line 200mm Dodge Stratus body



rear- and side-exhaust manifolds to fit the car, along with several tuned pipes, if you choose to go the all-Trinity route.

BODY, WHEELS AND TIRES. A set of TRC double purple front and magenta rear foam tires mounted on split-spoke

wheels is standard—and is a good starting combination for most swept tracks. A body is not included; I finished off my RNT with a Protoform Vauxhall/Opel Vectra body painted by XXX-Main painter Ron Viggiani using Parma Faskolor paints and XXX-Main paint masks.

I have a lot of touring-car mileage behind me, and based on my experiences with other pivot-ball nitro tourers, I expected the RNT to be a little loose in the turns, as most straight-from-the-box cars tend to be. I took it easy during the first few laps to get a feel for the track, and my initial impression was that the car felt very stable—more stable than other similar cars I've driven. The RNT had a slight push when entering turns and a little too much steering when exiting, but it didn't oversteer or break

rear traction. The car just wanted to continue turning. Joel noticed that I had set up the servo-saver to deliver a lot of bump-steer, and he figured the cornering loads were compressing the outside suspension and causing the car to "add steering." It took all of 10 seconds to loosen the clamping servo mount and reposition the steering servo.

LIKES

- Good value; includes many options at a "standard kit" price.
- Kit-standard setting delivers excellent performance.
- Smooth-shifting clutch-type 2-speed.



which is the fast way around a tight, technical track like American Hobbies' (Englishtown, NJ) layout. A one-way front pulley is available as an option; it increases corner speeds but also makes the car less stable during braking. For most of us mortals, full-time 4WD is the way to go.

I mentioned braking later in the corners, which requires a braking system you can rely on to operate consistently from lap to lap. The RNT delivers plenty of wheel-locking power if you need to avoid a pileup and fine control for anything less than a full stop. I noticed minimal fade during the day of testing.

So what's it like driving with Joel? Let's get one thing out of the way: yes, he is that good. Joel's driving is impossibly smooth and precise, and he seems to think three moves ahead. Whenever I managed to make a pass on him (there's an ego boost), I realized that he was really just setting me up to pass me and take an even bigger lead in the next turn. And he doesn't make mistakes or seem to push hard; he goes just fast enough to win. A true pro.

THE VERDICT

Trinity has produced the first factory "works" kit in the nitro-touring field by loading up the RNT with hop-up features as standard equipment. And although that usually leads to a high-priced kit, the Reflex is actually a good value and very competitively priced compared with its competition—competition that omits many of the Reflex NT's stock upgrades, such as threaded-body aluminum shocks, graphite upper deck and aluminum pulleys. But in the nitro-touring market, performance is everything, and the Reflex NT is the best-handling nitro touring car I have driven—with a box-stock setup, no less. Maybe "build and win" isn't such a bold claim after all. ■



REFLEX NT IS THE BEST-HANDLING NITRO TOURING CAR I HAVE DRIVEN WITH A BOX-STOCK SETUP, NO LESS.

Back on the track, the RNT's handling was noticeably improved, with consistent feel from corner entrance to exit.

With the front end sorted out, I got a better feel for the rest of the RNT's track manners. The double gear diffs allowed me to drive much harder and brake later in turns,

DISLIKES

- Doesn't include hardware for rotary carbs.
- Receiver box is a bit cramped.

SOURCE GUIDE

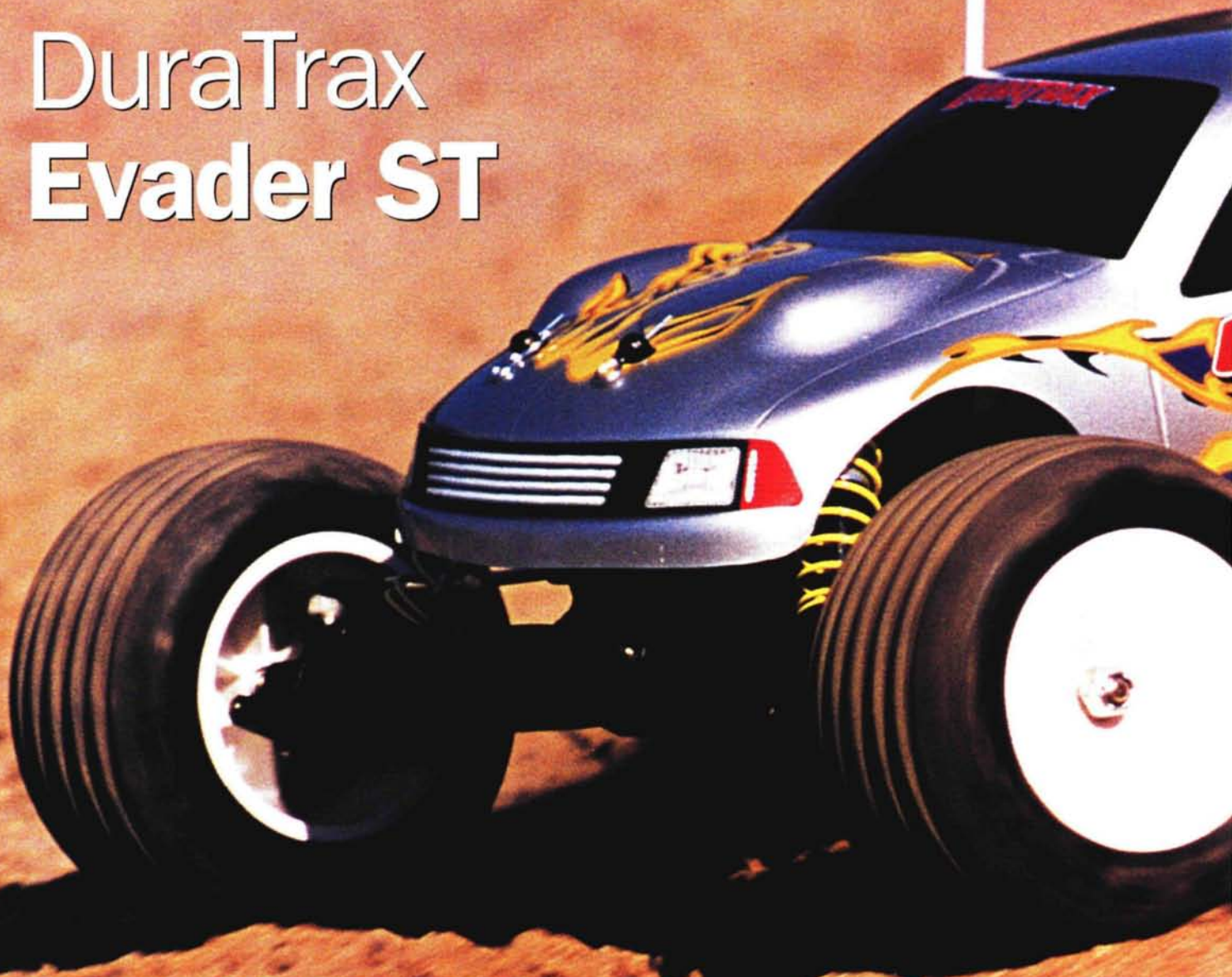
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XXX-MAIN (877) 744-6793; www.xxxmain.com.

THE COMPETITION

	SHOCKS	CHASSIS MATERIAL	AXLES	UPPER-DECK MATERIAL	TIRES	STREET PRICE*	REVIEWED
Kyosho V-One-R	Threaded aluminum	3mm T7075	Dogbone	Plastic	Rubber slicks	\$299	09/01 RC Nitro
Mugen MTX2 Sports	Threaded aluminum	3mm T7075	Dogbone	Plastic	Rubber slicks	\$369	08/01
OFNA Nitro OB-4	Threaded aluminum	3mm 6061-T6	CVA	Carbon fiber	Rubber slicks	\$269	11/00
Serpent Impulse	Threaded plastic	3mm T7075	Dogbone	Plastic	Rubber slicks	\$279	08/00
Trinity Reflex NT	Threaded aluminum	4mm T7075	CV-axles	Carbon fiber	TRC Foam	\$399	02/02
Yokomo GT-4W	Plastic	3mm T7075	Dogbone	Plastic	Rubber slicks	\$319	12/00

*Approximate; price varies with dealer.

DuraTrax Evader ST



THE READY-TO-RUN SEGMENT HAS GROWN DRAMATICALLY IN THE PAST FEW YEARS, with nitro vehicles accounting for most of the interest in the instant-RC scene. But lately, electric RTRs are being given new attention from manufacturers offering models that are nothing like the no-features, stripped-down machines that once defined the category.

DuraTrax best exemplifies the new breed of electric RTR with its latest effort, the Evader ST—a stadium truck that looks more like a race-ready ride than a ho-hum ready-to-run, judging by its threaded-body aluminum shocks, ball differential, slipper clutch, ball bearings and more. And that's just the rolling chassis; the electronic gear is high-quality stuff, too, and includes a reversing ESC, Futaba-built radio system and 20-turn motor. According to the specs, the Evader might be the best electric RTR stadium truck in the backyard and might even have the potential for track time—but it will take a thorough test to know for sure.

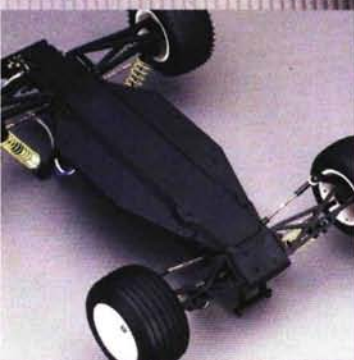


Race-
equipped
RTR

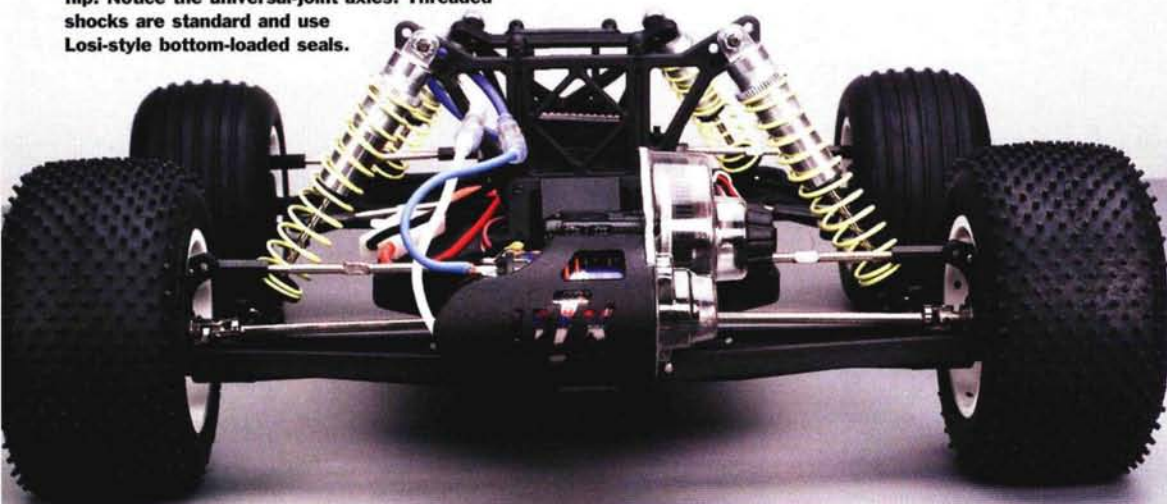




Raised sides give the Evader's chassis increased cornering clearance.

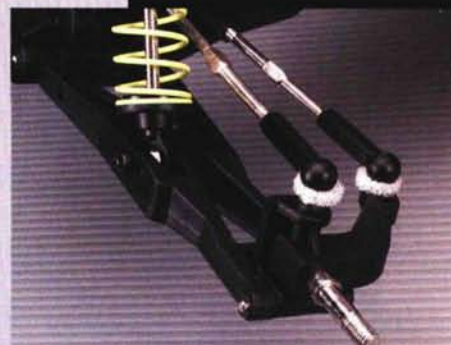


The Evader's wide stance makes it tough to flip. Notice the universal-joint axles. Threaded shocks are standard and use Losi-style bottom-loaded seals.



Combined kingpin/ball studs, foam dirt donuts and steel Lunsford-like turnbuckles are an unusually racy setup for an RTR. The steel axles accept Losi wheels and $\frac{3}{16}$ bearings.

Feature-wise, the Evader could be described as Team Losi and Associated's greatest hits. And that's a bad thing?



DATA CENTER

VEHICLE TYPE $\frac{1}{10}$ -scale RTR electric stadium truck

BEST BUYER First-time RC hobbyists, entry-level racers, any electric RC enthusiast

KIT RATINGS (poor, satisfactory, good, very good, excellent)

Instructions Satisfactory

Parts fit and finish Very good

Durability Very good

Overall performance Very good

SPECIFICATIONS

MANUFACTURER DuraTrax

MODEL Evader ST

DISTRIBUTED BY Great Planes

SCALE $\frac{1}{10}$

STREET PRICE \$190 (RTR); \$130 assembled with ESC (but without radio gear)

DIMENSIONS

Wheelbase 11.3 in. (287mm)

Width 13 in. (330mm)

WEIGHT

Total, as tested 62.6 oz. (1,775g)

CHASSIS

Type Molded semi-tub

Material Plastic

DRIVE TRAIN

Type Enclosed gearbox

Primary Pinion/spur gear

Drive shafts Steel, universal-joint

Differential Ball type

Bearing type Metal-shielded ball bearings

SUSPENSION

Type Lower H-arm with steel-turnbuckle camber links

Shocks Aluminum, threaded-body with cartridge seals

WHEELS

Type One-piece dish

Dimensions 2.2 in.

TIRES

Type (F/R) Soft-rubber rib tread/stud tread

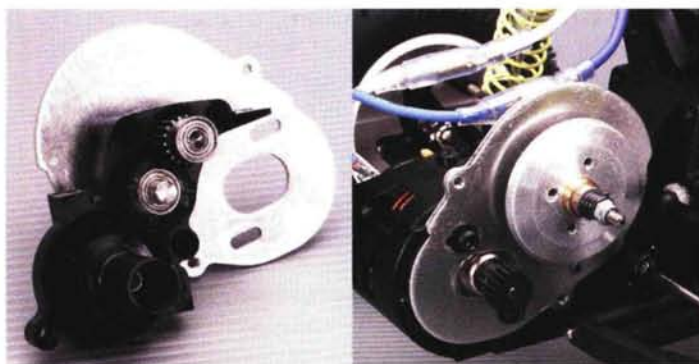
DURATRAX DUBS ITS PLASTIC "STRESS TECH" AND GUARANTEES IT TO BE UNBREAKABLE.

KIT FEATURES

CHASSIS. The many chassis features Team Losi and Team Associated have been massaging with their respective off-road machines did not go unnoticed by the DuraTrax designers. Like those of the all-time greats, the Evader's plastic chassis features a center battery tray with raised sides that increase cornering clearance and present a smaller footprint to the track in case the chassis bottoms out, and it utilizes front and rear suspension bulkheads that are separate pieces. But unlike the competition cars after which the Evader is patterned, the main chassis has significant flex owing to the soft plastic used in its construction. DuraTrax dubs the stuff "Stress Tech" and guarantees it to be unbreakable. If you do manage to break any Stress Tech item (virtually every molded chassis and suspension part) in your first six months with the Evader, DuraTrax will replace it.

DRIVE TRAIN. The Evader's 3-gear, diff-on-the-bottom transmission is equipped with an Associated-style slipper clutch and steel top shaft with integrated top gear. The single-pad clutch design allows spur-gear changes to be made without altering the slipper setting, and the included 88-tooth spur and steel 18-tooth pinion are standard 48 pitch—no metric stuff to hunt down when it's time for a gear change.

DuraTrax also made efforts to keep the Evader's ball differential friendly with "standard" hobby gear by spec'ing $\frac{3}{32}$ diff balls instead of an uncommon metric size. The diff uses steel outdrives and a caged thrust bearing,



Above left: no gimmicks here, just a solidly built 3-gear tranny with ball differential. The outdrives are steel, and like the rest of truck, the tranny is equipped with ball bearings. Above right: it doesn't affect its functionality, but the motor plate looks a little rough. The Evader's spur gear can be changed without disturbing the slipper setting.

& ACCESSORIES

DuraTrax Sprint reversing ESC

The included Sprint ESC performed well with punchy response thanks to 1000Hz switching, a unique auto-set feature that takes ESC programming from push-button to no



button. Each time the Sprint is turned on, it activates its auto-setting mode for 2 seconds: just punch full throttle, grab full brake, and let the trigger return to neutral to set up the ESC. The Sprint is preprogrammed by DuraTrax and doesn't have to be reset, but it's nice to know how easily it can be set up. According to DuraTrax, the Sprint operates with 6- or 7-cell power with motors down to 20 turns.

DuraTrax transmitter and RX-100 receiver

Futaba builds the radio gear for the Evader, so it isn't surprising that the gear is well constructed and reliable. It's well equipped, too, complete with dual-rate steering in addition to the usual trims and reversing knobs.

DuraTrax SX-100 servo

The DuraTrax servo is a relabeled Futaba S3003, which is good for about 40 oz.-in. of torque. That's light for a truck headed into hard-core competition, but for the Evader's play/first-time-racer mission, it's just fine.



DuraTrax Photon Speed motor

We're used to seeing 20-turn motors in RTRs, but DuraTrax is one of the few to offer an open-endbell design with standard replaceable brushes. I'd love to see DuraTrax go the extra mile and add ball bearings to the Photon (it's bushed), but as is, the motor is a big step up from a 27-turn 540 and a cut above a closed-endbell 20-turn.

Video

As a reader of *RC Car Action*, you can probably skip the Evader's included video. But for the newest of newcomers, the video all but guarantees that the most common first-timer mistakes



are avoided. From the mundane (how to thread the antenna wire into its tube) to more meaningful steps (setting the slipper clutch and ball diff), the video covers the basics clearly and concisely. After the how-to stuff has rolled past the VCR heads, stick around for action clips of DuraTrax's other RTR vehicles.

Tools

You won't need any tools to get the Evader ready for action, but DuraTrax does include a few items that will come in handy for maintenance. A four-way wrench fits the Evader's $\frac{11}{32}$ axle nuts and slipper clutch, and hex keys are provided for the $\frac{3}{32}$, 4-40-thread chassis screws and the 1.5mm pinion setscrew. A stamped turnbuckle tool is also included.

and an elastic locknut captured in a plastic holder makes certain the diff will hold its setting. To adjust the diff, the right drive axle must be removed to allow access to the hex-head diff screw.

Speaking of drive axles, the Evader's are plated-steel, universal-joint models and are a real step up from dogbones. Ball bearings are also a bonus; with the exception of the steering bellcranks, all the Evader's parts turn on metal-shielded bearings.

SUSPENSION AND STEERING. The highlights here are the Evader's threaded-body aluminum shocks, which are filled from the bottom and capped by plastic seal cartridges with double O-rings inside. DuraTrax did a good job of building them, too; there's only a tiny bit of air to emulsify (just pump the shock a couple of times), and the aluminum preload collars are factory-set for an "arms- and axles-level" stance.

The front suspension closely resembles the Team Losi Double-XT's, complete with camber-mount "ears" on an arched shock tower and wide arms that thicken at the shock-mounting points. Three upper and lower shock positions are available as well as three inboard camber-link locations on the shock tower. A single position is offered for the outboard end of each front camber link because the Evader uses combined kingpin/ball studs to hold the steering arms in their carriers. Steel replicas of Lunsford titanium turnbuckles make up the camber links and tie rods, and foam donuts under the ball cups prevent dirt from fouling the linkages.

The rear suspension is built on a separately attached bulkhead with integrated arm mounts that provide 3 degrees of toe-in. Wheelbase is adjustable within a 3mm range by relocating spacers on the outboard hinge pins, and three positions are available for each end of the rear camber links as well as the upper and lower shock mounts.

BODY, WHEELS AND TIRES. Clear bodies have all but disappeared from the RTR scene, and the Evader continues that trend with six available factory-finished color schemes. Each scheme indicates a particular transmitter frequency, so if you have an Evader and so does the guy down the street, you can be assured that you won't have a frequency conflict as long as your Evaders are different colors. To complete the five-color body, decals for the grill and headlight details, blackout windows and various DuraTrax and Evader logos are provided.

Unexpectedly soft DuraTrax rubber is factory-glued to the Evader's white dish wheels (which are interchangeable with Team Losi hoops), and the five-rib front/stud rear combo looks like a good match for play action and loamy track surfaces.

DuraTrax Piranha 1800mAh pack

Any stick pack with a Tamiya-style connector brings the Evader to life; I chose DuraTrax's 1800mAh model. A pack's number indicates its capacity, which can be anywhere from 1500 to 3000mAh. More capacity equals longer run time but



greater cost, too. The

Evader's 20-turn motor is fairly frugal with power, and the 1800mAh Piranha pack provided plenty of run time—about 10 minutes per charge.

DuraTrax Piranha charger

I kept it all in the DuraTrax fish family with a Piranha peak charger. Plug the pack in, push the button, and wait for the "ready" LED to flash; that's all it takes to get a full charge into a pack.

YOU'LL NEED

- 6-cell stick battery pack
- Charger

FACTORY OPTIONS

- Aluminum front brace—part no. DTXC6613 (blue); DTXC6614 (purple)
 - Lightweight slipper plate—DTXC9312 (blue); DTXC9313 (purple)
 - Aluminum battery brace—DTXC6294
 - Titanium hinge-pin set—DTXC8029
 - Front/rear swaybar kits—DTXC9576/DTXC9577
 - Hard-anodized front shocks—DTXC9223
- * Partial list; other options available

The Evader may seem to be positioned as a budget racer, but its low price and RTR status are likely to land it in the hands of first-timers who will dish out backyard punishment that's more severe than that of the hardest day at the races. With that kind of use in mind, I first took the Evader to a schoolyard for a don't-try-this-at-home wreck-fest.

I dumped one pack by chugging the Evader through short grass, which is a real run-time killer but a good test of an ESC's durability. The Sprint speed control didn't reach thermal-cutoff temperature, but it did heat up (as did the straining Photon motor). Performance never suffered, though, and the Evader passed its first test with flying colors.

To assess the durability of the truck's Stress Tech parts, I put the Evader through its paces jumping curbs and launching down a short set of concrete steps. Just leaping off the top step wasn't enough; I parked a skateboard launch ramp at the top of the steps for extra



THE EVADER BOUNCED BACK FROM MANY SHOTS THAT I'M CONFIDENT WOULD HAVE CRIPPLED A TRUCK WITH MORE RIGID PARTS.

LIKES

- Very complete RTR package.
- Tons of features; threaded shocks, ball diff, turnbuckles, bearings and more.
- Good-looking factory-finished body.
- Included motor is worth keeping.

parts-busting hang time. The Evader bounced back from many shots that I'm confident would have crippled a truck with more rigid parts, but I did manage to break one item. When the truck landed squarely upside-down after I dropped it from a 6-foot-plus jump down the steps, the weight of the battery caused the battery strap to pull its mounting post off the front chassis brace. The brace is a Stress Tech part, and it was replaced free of charge. Sweet.

After the Evader survived the condensed thrash session, I moved on to tests more befitting its performance features. Where else but at the racetrack? The truck's stud-tread rear tires hooked up well on Xtreme RC Raceway's (New Milford, CT) soft, loose surface, but the front end pushed more than I liked—and this is coming from a guy who likes a little understeer. Dialing out front spring preload to lower the front end helped (and was the first adjustment I made because it didn't require tools), but a more significant improvement came when I reduced front toe-in with a few twists of the truck's turnbuckle tie rods. The Evader turned in more aggressively, transitioned well from turn to turn and felt as though it could hang in stock class. The only place the truck seemed to suffer was on the bumpy sections of the track, where it had trouble holding its line. I'm sure changes of shock-fluid viscosity and spring rate would help, but the relative flexibility of the Evader's suspension parts represents an untunable wild-card in the setup equation.

Whether in the backyard or on the track, the Evader's electronics performed well. The DuraTrax-by-Futaba transmitter and receiver provided all the range and reliability you would expect of Futaba, and the "standard" steering servo performs better than you might expect. The Sprint ESC has a punchy feel and proportional brakes for precise control. Reverse engages "softly" at first to spare the transmission gears but quickly ramps up to full throttle. This doesn't diminish the Evader's capability to back out of trouble, but it does take some of the fun out of slam-bang stunt driving. I would prefer that DuraTrax let the slipper clutch do its job to protect the tranny and let me have full-throttle reverse on demand.

THE VERDICT

The DuraTrax Evader ST combines a lengthy list of features with an unexpectedly low price to deliver one of the best values in RC. Competition-oriented types will wish for stiffer plastics, but the majority of the Evader's buyers are not likely to notice or care that the truck is more flexible than a hardcore race machine. What the Evader owner is likely to appreciate are the truck's good-looking no-paint body, high-quality radio system, reliable reversing ESC and just-try-to-break-it durability (and the generous parts-replacement policy, if something does let go).

And although the Evader is probably too flexible for close modified competition, there is nothing to stop you from competing in the stock class with it. It has all the features you'll need to adjust its performance to suit the track, so why not sign up for a race or two? ■

DISLIKES

- Not quite RTR; still needs a stick pack and a charger.

SOURCE GUIDE

DURATRAX Distributed by Great Planes Model Distributors, (800) 682-8948; www.duratrax.com.

THE COMPETITION

	RADIO	SPEED CONTROL	BEARING TYPE	DIFFERENTIAL	CAMBER LINKS	SLIPPER CLUTCH	MOTOR	STREET PRICE	REVIEWED
Associated RC10T3 RTR	Hitec Lynx Sport	LRP Runner	Bushings	Ball	Turnbuckles	Single-pad	20-turn	\$240	3/01*
DuraTrax Evader ST RTR	DuraTrax/Futaba	DuraTrax Sprint	Ball bearings	Ball	Turnbuckles	Single-pad	20-turn	\$190	2/02
Kyosho Ultima ST ReadySet	Kyosho Perflex	Mechanical	Bushings	Gear	One-piece plastic	None	27-turn	\$190	3/01*
Traxxas Rustler RTR	Traxxas TQ	Traxxas XL-1	Bushings/bearings	Gear	One-piece plastic	Rulon peg	20-turn	\$190	3/01*

*See the March 2001 issue for the "2WD Sport Truck Shootout."

Mugen MSX3



Ready-to-Race

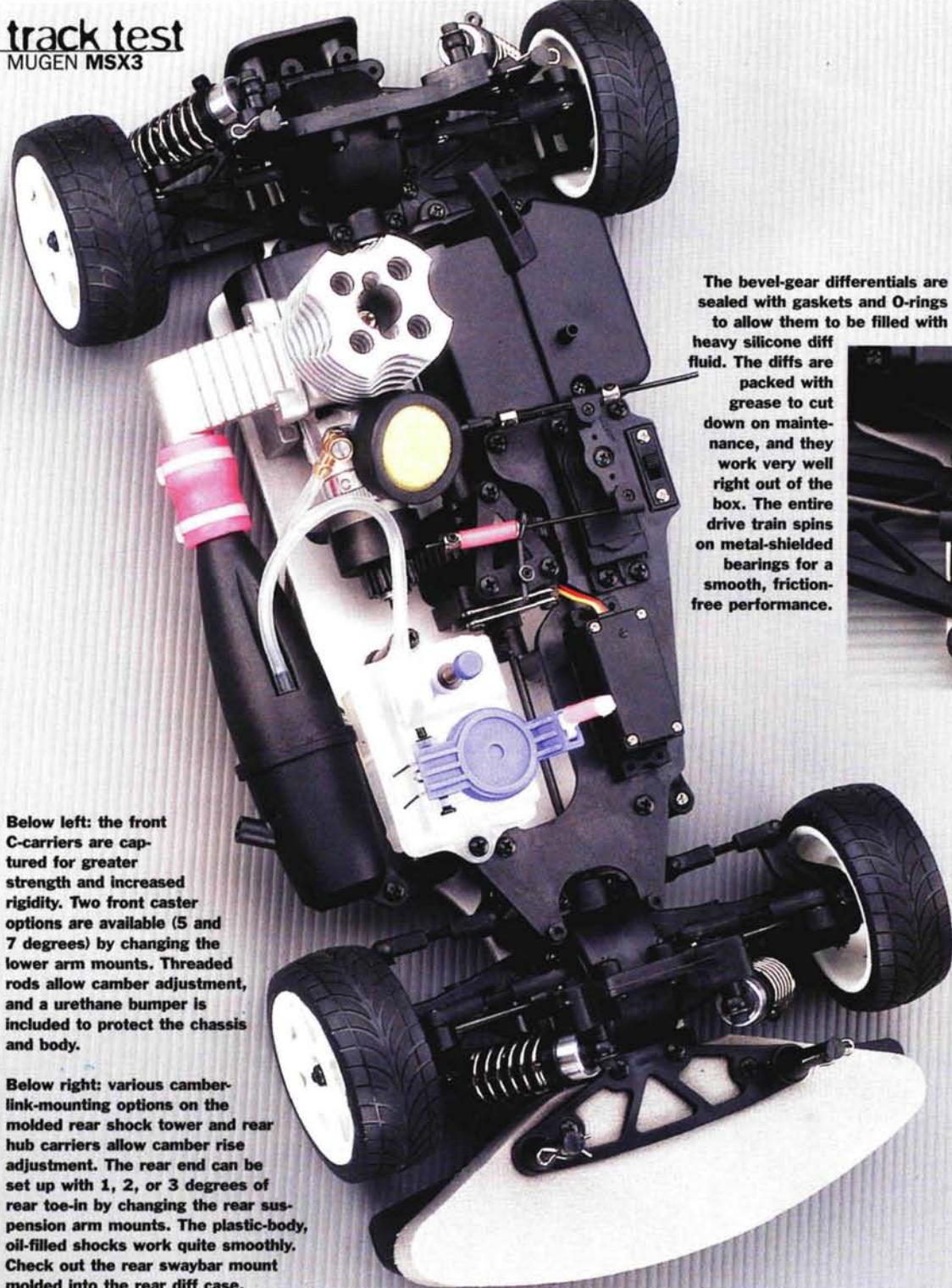
PHOTOS BY PETER HALL



WHEN IT WAS FIRST INTRODUCED BACK IN 1999, the Mugen Seiki Prime 12 was a unique ready-to-run (RTR) nitro touring car. It was the first RTR vehicle to feature a shaft-drive 4WD system and a ROAR-legal, .12-size engine with a 2-needle slide carb. The Prime 12 held its own as a competent and reliable performer, but as time went by, it became clear that a new platform was needed to meet the demands of today's discriminating RTR nitro touring-car customer. Mugen's new MSX3 is designed to meet those challenges, but with standard features such as O-ring-sealed diffs and a 3mm-thick, fully countersunk chassis, it might just set a

new standard. If you're wondering how the MSX3 performs, turn the page to find out.

Nitro Touring Car



The bevel-gear differentials are sealed with gaskets and O-rings to allow them to be filled with heavy silicone diff fluid. The diffs are packed with grease to cut down on maintenance, and they work very well right out of the box. The entire drive train spins on metal-shielded bearings for a smooth, friction-free performance.

Below left: the front C-carriers are captured for greater strength and increased rigidity. Two front caster options are available (5 and 7 degrees) by changing the lower arm mounts. Threaded rods allow camber adjustment, and a urethane bumper is included to protect the chassis and body.

Below right: various camber-link-mounting options on the molded rear shock tower and rear hub carriers allow camber rise adjustment. The rear end can be set up with 1, 2, or 3 degrees of rear toe-in by changing the rear suspension arm mounts. The plastic-body, oil-filled shocks work quite smoothly. Check out the rear swaybar mount molded into the rear diff case.



DATA CENTER

VEHICLE TYPE 1/10-scale nitro-powered touring car (RTR)

BEST BUYER First-time racers and general RC enthusiasts

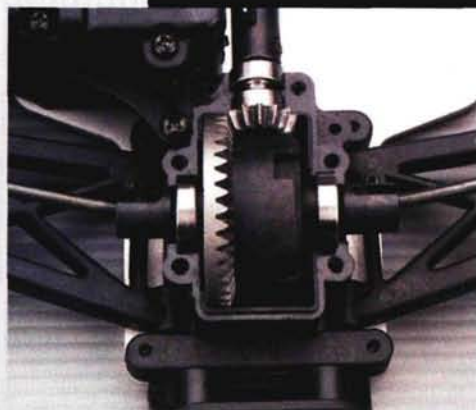
KIT RATINGS (poor, satisfactory, good, very good, excellent)

Instructions Good

Parts fit/finish Good

Durability Very good

Overall performance Very good



SPECIFICATIONS

MANUFACTURER Mugen Seiki

MODEL MSX3 Touring Car

SCALE 1/10

STREET PRICE \$299

DIMENSIONS

Wheelbase 10.2 in. (259mm)

Width 7.80 in. (198mm)

WEIGHT

Total, as tested 65.87 oz. (1,866g)

CHASSIS

Type Double deck

Material Aluminum/plastic

DRIVE TRAIN

Type Shaft-drive 4WD

Transmission Single speed

Primary Pinion/spur gear

Drive shafts Dogbones

Differentials O-ring-sealed

bevel gear

Bearing type Metal-shielded bearings

SUSPENSION

Type Lower H-arm with upper links

Damping Plastic-body, oil-filled shocks

WHEELS

Type One-piece 6-spoke plastic

TIRES

Type Rubber-treaded radials w/foam inserts

ENGINE AND ACCESSORIES

(included)

Engine Mugen MV-12

Starter Pull-start

Carb Dual-needle slide

Exhaust Molded tuned pipe

Fuel capacity 75cc

IF YOU CONSIDER MUGEN SEIKI'S RACING HERITAGE, IT ISN'T SURPRISING THAT THE MSX3 INCLUDES A .12, ROAR-LEGAL ENGINE.

KIT FEATURES

CHASSIS. The MSX3 has a 3mm-thick aluminum chassis; that's thick by RTR standards. The chassis is very rigid as is, but the additional stiffening provided by the molded upper deck makes it as stiff as a brick. The screw holes in the chassis are countersunk, and the engine-mounting screw holes are slotted and recessed. To make clutch-bell or spur-gear changes, all you have to do is loosen the four engine-mounting screws and slide the engine over. This is a great feature because many RTR nitro sedans have fixed engine mounts.

The included Hitec HS-303 steering and throttle servos are hung from the top deck, and a compact, sealed radio box safely houses the receiver and a 4-cell battery holder. A urethane bumper is installed between the upper and lower molded mounts.

SUSPENSION AND STEERING. Extra-long front and rear suspension arms stretch the MSX3's width to 198mm—just under the ROAR 200mm maximum. The suspension arms capture the C-carriers for increased strength and rigidity. Setscrews threaded into all four of the suspension arms allow suspension downstop, or “droop,” adjustment.

The suspension arms pivot on polished steel hinge pins captured by front and rear suspension-arm mounts. There are two front caster options (5 or 7 degrees) and three rear toe-in options (1, 2, or 3 degrees). Five suspension-arm mounts allow front caster and rear toe adjustments. Out

of the box, the MSX3 has 7 degrees of front caster and 2 degrees of rear toe-in. The suspension components are flexible enough to absorb the punishment that first-time nitro racers are known to dish out but feel rigid enough to provide consistent handling.

Threaded upper links and steering rods allow front and rear camber and front toe-in and toe-out adjustment, but a link must be removed to make that happen.



The MSX3 chassis is 3mm thick and is extremely rigid. All of the screw holes are countersunk, and the engine-mounting screw holes are slotted and recessed. As you can see, the opening under the spur gear is large enough to accommodate the optional 2-speed tranny, and the opening under the flywheel allows you to start the engine with a starter box or starter wheel.

Plastic-body, oil-filled shocks are attached to molded shock towers that have various shock and camber-link mounting locations for extra tuning versatility. The shocks aren't ultra-fancy, but they are equipped with silicone O-ring seals for smooth performance and rubber diaphragms for volume compensation. Overall, the shocks perform very well.

The rear hub carriers have three camber-link mounting locations to allow roll center adjustment. The bulkheads include mounts for the optional swaybars to help keep the chassis flat while cornering.

The steering system is a basic, twin bellcrank/drag-link setup equipped with an adjustable servo-saver and aluminum drag link. The bushing-equipped bellcranks pivot on aluminum posts; ball bearings could be installed to make the system even smoother.

DRIVE TRAIN. Like its predecessor, the Prime 12, the MSX3 features a shaft-drive 4WD system. A single, 42-tooth spur gear is installed on molded bulkheads on the center of the chassis.

The disc-brake system consists of a molded brake rotor and chromed-steel brake pads. The rotor floats on a steel drive dog/brake hub for increased durability. Steel dogbones transfer power from the centrally mounted spur gear to the front and rear bevel-gear differentials.

Thanks to the O-ring seals and gaskets, the diffs can be filled with heavy silicone fluid. O-ring-sealed diffs are usually reserved for more expensive pro-level cars, and they are a welcome feature on the MSX3. The diffs are assembled with thick grease to make them maintenance-free but can be rebuilt with heavy silicone fluid.

Steel dogbones transfer the power from the diffs to the wheels, and the entire drive train (including the wheels) spins on smooth, shielded ball bearings.

ENGINE AND ENGINE ACCESSORIES. Mugen Seiki includes its own MV-12 engine. If you consider Mugen Seiki's racing heritage, it isn't surprising that the MSX3 includes a .12, ROAR-legal engine. The engine has a dual-needle-valve slide carb that allows precise engine tuning and smooth throttle control. The engine also features a ball-bearing-supported crankshaft, bushed connecting rod, tall machined-aluminum heat-sink head, ABC construction and a handy pull-start mechanism. A molded tuned pipe and a cast-aluminum exhaust manifold are included.

The ROAR-legal, 75cc fuel tank has a flip-top lid for quick and easy fuel stops, and to simplify engine starting, a plunger-type primer feeds fuel to the carb. To give you a head start on getting to the parking lot and giving your wallet a break, the MSX3 comes with a 500cc-fuel bottle, a dry-cell glow-plug igniter and a nylon carrying case to haul the MSX3 around.

BUILDING & SETUP TIPS

The MSX3 arrives 90 percent assembled, which means that there is very little left to do after opening the box. You must fill the shocks with oil, mount the tires, paint the body, and that's all. Here are a few tips that will help you get the MSX3 dialed in and ready to compete at a club race.

BODY PREP. On the body, the engine-cooling openings on the front and rear windows, the body-post holes and the opening for the exhaust stinger are factory outlined to help you properly mount the body. The engine is on the right side of the chassis, but the engine cooling opening in the rear window is offset to the left side of the body. This placement allows you to reach the pull-start handle and start the engine without removing the body.

THREAD-LOCK. Apply thread-lock to all the screws that thread into metal—especially the engine-mounting screws and the setscrews that secure the drive cups to the front and rear bevel shafts.

SHOCK OIL. The shocks come installed on the shock towers, but they must be removed to be filled with oil. The supplied shock fluid will work just fine, but you might want to pick up a few bottles of silicone shock fluid (in various viscosities) at your local hobby shop to help balance front and rear traction. I filled the front shocks with 80WT and the rear shocks with 50WT.

SWAYBARS. Front and rear bars will help keep the car flat in the corners, and that will ultimately lower your lap times. Optional swaybars are available through Mugen Seiki, but Tamiya rear TA04 swaybars fit the MSX3's front and rear mounts perfectly. Tamiya's Rear Color Stabilizer Set (item no. 53442) includes three different swaybars, the necessary control rods and ball ends. You'll need two sets—one for each end of the car.

SILICONE DIFF FLUID. The diffs come packed with grease for easy maintenance, but using a heavy silicone fluid instead will provide more consistent handling and will allow you to have more traction where you need it. Mugen recommends that you fill the front diff with 7,000WT and the rear diff with 1,000WT. I found this combination just about perfect for my driving style. Be sure to clean all of the grease from the gears before you change over to the silicone; just about any nitro cleaner will quickly remove the grease. There's an exploded view of the diffs on page 13 of the instruction manual.

YOU'LL NEED

- 12 AA batteries
- Fuel
- Lexan body paint

Hitec Lynx 2-channel, AM transmitter and receiver

The Lynx transmitter includes standard throttle and steering trims and dual-rate steering so you can dial in the necessary steering throw. Momentarily



pushing the steering rate override (SRO) button gives you full travel from the servos, even if you have most of the total steering throw dialed out with the dual-rate function; release the button, and your dual-rate setting returns. This is a great first radio system, and if you decide to upgrade to a more sophisticated radio system down the road, it will make a nice second transmitter.

Hitec HS-303 steering and throttle servos

The standard servos provide more than enough torque to turn the wheels and operate the throttle and brake linkage. You can install a faster steering servo as your racing skills improve, but you won't be disappointed with the MSX3's handling with the standard servos.

DuraTrax Red Alert nitro racing fuel

Red Alert's race-tested mixture of castor and synthetic oils provides optimum engine performance and is available in 10- and 20-percent nitro; I used the 20-percent blend with excellent results.

BODY, WHEELS AND TIRES. The MSX3 comes with an unpainted Protoform body. Choices include an Accord or Stratus body, or you can go for the Vectra body, as I did. For body detailing, window masks, stickers and Mugen Seiki Racing logos are included. I used a Team Orion/Thunder

Designs Eyeball Internal Graphic Decal Set to complete the body.

The MSX3 rides on rubber-treaded radials with foam inserts installed on 6-spoke nylon wheels, and the tires are neatly CA'd to the wheels at the factory.

PERFORMANCE

I flooded the MV-12 engine after pushing the fuel tank's priming plunger four times. (Note to self: only push the plunger down twice the next time I prime this engine.) After clearing out the excess fuel, it took only a couple of tugs on the pull-start cord to fire up the engine.

I put the car on an out-of-service starter box and let the engine idle through the first two tanks; it didn't even stall once. After the no-load initial break-in, I ran the car around slowly and let the engine go through a few more tanks of fuel. After that, I leaned out the high-speed needle valve slightly, made a few idle-speed adjustments and was soon racing the MSX3 around the street with the throttle wide open.

The MSX3's designers did their homework when they settled on a gear ratio for the single-speed tranny. The car launches hard off the line and reaches top speed within 70 feet. This is an ideal setup for racing on a medium to large track. The MV-12 engine's dual-needle carb was also a big contributor to the MSX3's quick off-the-line performance; the ability to adjust the low-end mixture made all the difference.

LIKES

- Super-rigid chassis.
- O-ring sealed diffs.
- Powerful and reliable engine.
- ROAR legal.

The disc-brake system is smooth and easy to modulate, but after 5 minutes of stop-and-go racing, the car's brakes had faded considerably. I attribute this to the softening of a small plastic brake rotor that couldn't take the heat.

The soft-compound, directional tires and equally soft suspension allowed the MSX3 to hook up very well on the dusty, dirty, asphalt surface. The car exhibited considerable roll in the corners, and that caused a slight on-power push. Pulling

back the throttle before entering tight corners transfers the weight to the front and gives the MSX3 the necessary turn-in to tackle them. Despite its soft, stock suspension setup, the MSX3 transitions quite well, and it never felt as if the rear end wanted to swing around, despite the less than perfect test surface. Heavier shock fluid and sway-bars would make the MSX3 handle more aggressively. Check out more details about those mods in "Building and Setup Tips."

I have to admit that I didn't bang up the MSX3 too much; I didn't run it into any curbs or flip it over onto its lid. This is a testimony to the car's competent, predictable handling; I was in control at all times. The setscrew that secures the rear drive dog to the bevel shaft did loosen up and get lost, but that's about it.

THE VERDICT

Mugen Seiki has put together an excellent RC package for those who want to get started in nitro touring cars but are on a tight budget or are uncertain of their building abilities. In stock trim, the MSX3 is perfect for club racing, but with a few well-chosen factory hop-ups, its performance level can be taken up several notches. The Mugen Seiki MSX3 is well-equipped to tear up parking lots and can hang with the club guys on raceday. ■

DISLIKES

- Threaded camber links and tie rods cannot be adjusted without disassembly.
- Plastic brake rotor.



THE CAR LAUNCHES HARD OFF THE LINE AND REACHES TOP SPEED WITHIN 70 FEET.

SOURCE GUIDE

DURATRAX Distributed by Great Planes Model Distributors; www.duratrax.com.

GREAT PLANES MODEL DISTRIBUTORS (217) 398-3630; www.greatplanes.com.

HITEC RCD INC. (858) 748-6948; www.hitecrcd.com.

MUGEN SEIKI RACING/MUGEN USA (949) 707-5607; www.mugenracing.com.

TAMIYA AMERICA INC. (800) 826-4922; www.tamiyausa.com.

TEAM ORION/THUNDER DESIGNS (714) 694-2812; www.team-orion.com.

THE COMPETITION

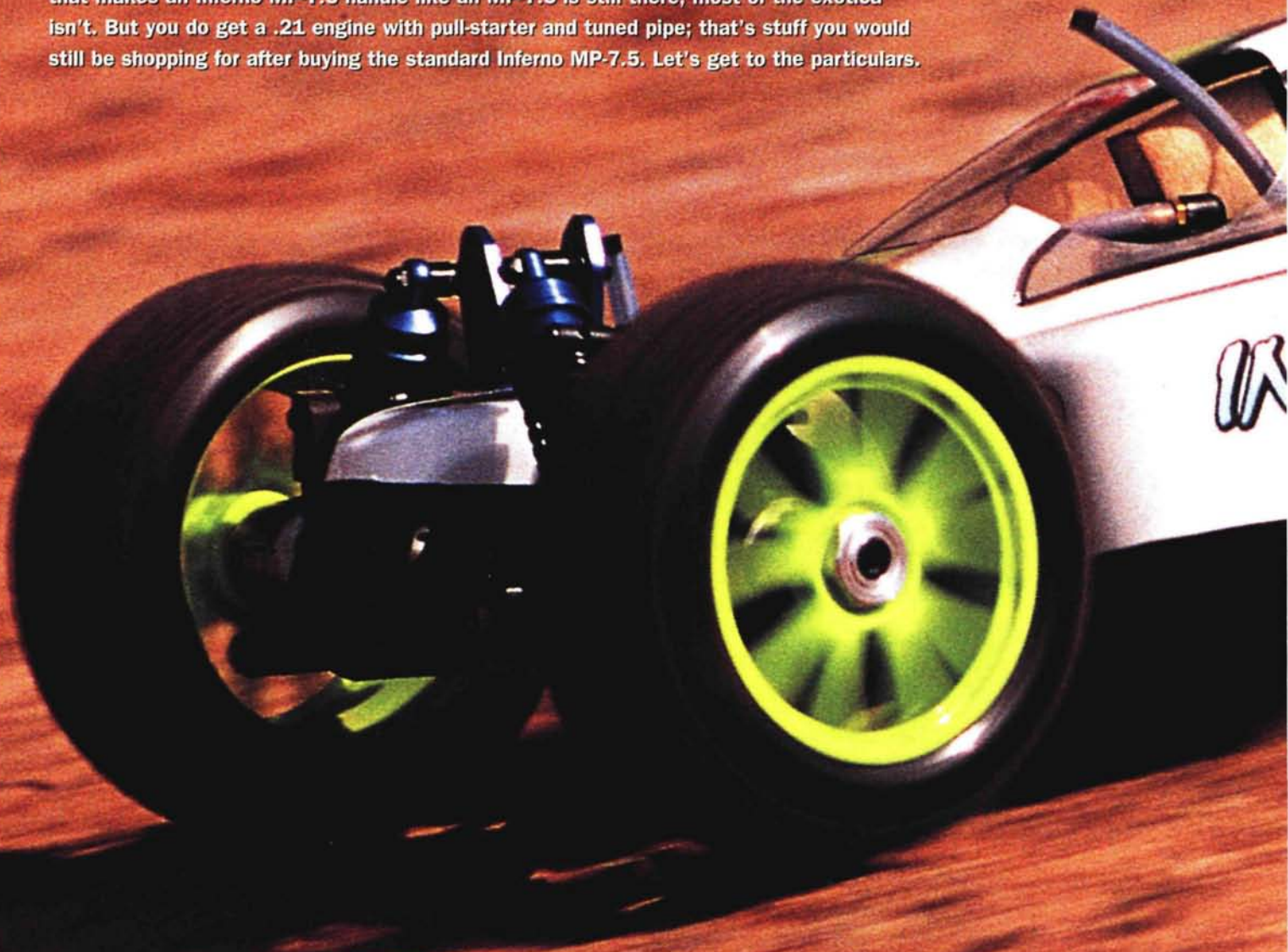
	RADIO	STARTER	BEARINGS	ENGINE	PAINTED BODY	STREET PRICE*	REVIEWED
DuraTrax Street Force	Hitec	Pull-start	Yes	.15	Yes	\$300	9/00
HPI Nitro RS4 RTR	HPI	Pull-start	Yes	.15	Yes	\$300	4/99
Traxxas Nitro 4-TEC	Traxxas	EZ-Start	Yes	.15	Yes	\$319	4/99
Kyosho Alpha GP	Kyosho	Pull-start	No	.12	Yes	\$265	11/00
Mugen MSX3	Hitec	Pull-start	Yes	.12	No	\$299	2/02

Cars listed alphabetically by brand. *Approximate; price varies with dealer.

Kyosho MP-7.5 Sports

THERE IS NO MORE SUCCESSFUL 1/8-scale buggy series than the Kyosho Inferno. With five consecutive IFMAR World Championship titles between the MP-5, MP-6 and the latest MP-7.5, Kyosho has made an indelible mark on the nitro racing scene. With that kind of performance, who wouldn't want an Inferno? Next question: given its \$700+ price tag (kit, engine and accessories), who can afford one?

Kyosho has long known that many would-be Inferno customers can't (or don't want to) plunk down the cash for a full-race 7.5, and it has always made less extravagantly equipped versions of the Inferno available—originally as “DX” models, and most recently, as “Sports” kits. That brings us to our test subject, the Inferno MP-7.5 Sports. Everything that makes an Inferno MP-7.5 handle like an MP-7.5 is still there; most of the exotica isn't. But you do get a .21 engine with pull-starter and tuned pipe; that's stuff you would still be shopping for after buying the standard Inferno MP-7.5. Let's get to the particulars.





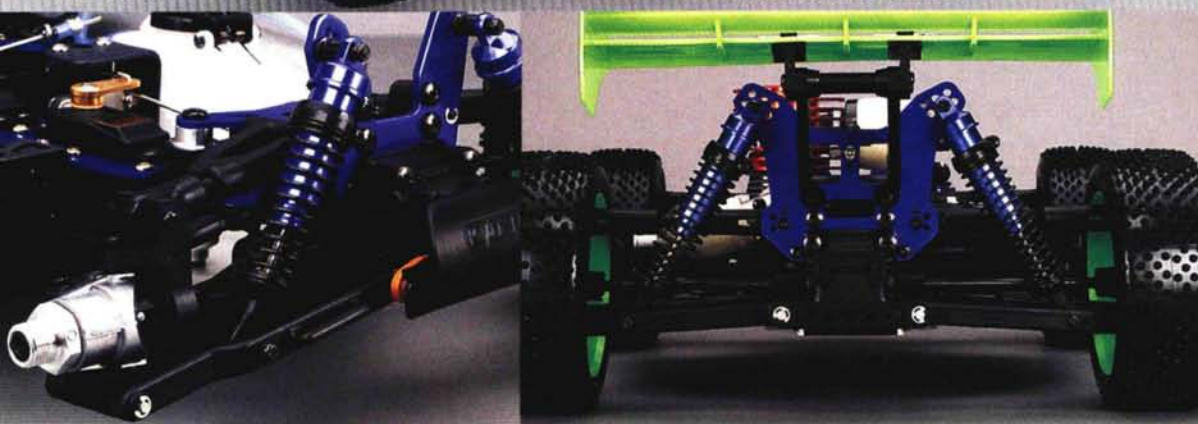
A Worlds-winner
you can afford

INFERNO 7.5
SPORTS
TEAM KYOSHO INTERNATIONAL



Below: universal-joint front axles would be preferable to the included dog-bones, but the axles did stay put. All the other suspension parts are top quality and identical to the standard- and Kanai-Edition MP-7.5s'.

Below: the cobalt blue shocks and shock tower look awesome and provide plenty of adjustment possibilities.



DATA CENTER

VEHICLE TYPE 1/8-scale 4WD nitro off-road buggy

BEST BUYER Nitro enthusiast who appreciates the Inferno's IFMAR cred but can't afford the full-on MP-7.5

KIT RATINGS (poor, satisfactory, good, very good, excellent)
Instructions Good
Parts fit and finish Very good
Durability Very good
Overall performance Good

Above: the multi-piece tuned pipe is unusual. The halves are O-ring sealed, and a deep convergence cone is hidden inside. Check out the new heat-sink head on the GS21R.

Right: plastic shields minimize how much front-wheel roost makes it onto the chassis. Note the closely spaced screws that mold the engine to the chassis (instead of conventional engine mounts).

SPECIFICATIONS

MANUFACTURER Kyosho
MODEL Inferno MP-7.5 Sports
DISTRIBUTED BY Great Planes
SCALE 1/8
STREET PRICE \$490

DIMENSIONS

Wheelbase 12.7 to 12.9 in. (323 to 328mm)
Width 12.1 in. (307mm)

WEIGHT

Total, as tested 120 oz. (3,402g)

CHASSIS

Type Stamped plate with radiused sides
Material 3mm aluminum

DRIVE TRAIN

Type Shaft-driven 4WD
Primary 13T clutch bell/46T spur gear
Center drive shafts Dogbones
Drive axles Dogbones
Differentials Bevel gear
Bearing type Metal-shielded ball bearings

SUSPENSION

Type Lower H-arm with wishbone upper arm (front), threaded camber link (rear)
Shocks Blue-anodized, aluminum-body, oil-filled

WHEELS

Type One-piece 10-spoke

TIRES

Type Kyosho medium-compound multi-pin

THE ENTIRE CENTER DRIVE TRAIN IS ASSEMBLED ON THE CHASSIS FOR YOU BY KYOSHO.

KIT FEATURES

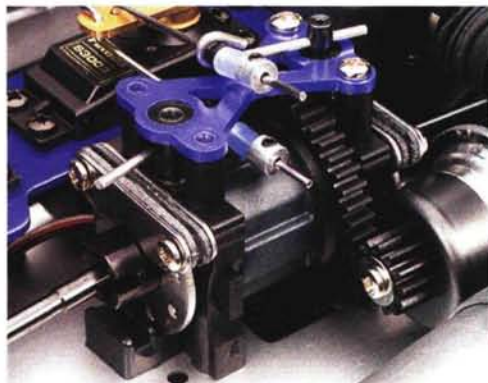
CHASSIS. The Sports' chassis is almost identical to the standard 7.5's; the only difference is an extra opening behind the engine-mounting holes for pull-start housing clearance. Otherwise, it's the same 3mm-thick sheet of aluminum with countersunk screw holes, gently radiused sides, pads for droop screws and stamped-in blisters that allow the diffs to sit lower in the chassis than is possible with a flat chassis.

Up top, a 2mm-thick aluminum radio tray is joined to the main chassis with plastic standoffs and a flange on the front of the dual-compartment radio/battery box. A rod brace stiffens the rear of the chassis, but the front end isn't braced except where a 2mm plate joins the steering bellcranks to the front bulkhead.

DRIVE TRAIN. In addition to dropping the diffs lower in the car by stamping clearance blisters into the chassis, MP-7.5 designer (and reigning IFMAR World Champ) Yuichi Kanai downsized the MP-7.5's diffs to further concentrate drive-train mass as low as possible on the chassis. In Sports trim, the (relatively) small-diameter diffs have plastic housings and cast ring gears with two internal spider gears. O-rings seal the out-drives, and a gasket seals the case to the ring gear, allowing silicone fluid to be used for diff tuning (which you'll have to supply yourself, since the Sports' diffs are factory-built with grease). In fact, the entire center drive train is assembled on the chassis for you by Kyosho.

Dogbones connect the front and rear diffs to the center diff, which is mated with a plastic spur gear. I have little love for plastic spur gears on 1/8-scale buggies, but I'll reserve judgment until I find out whether it holds up or not. The center diff is also home to the Sports' brake system: single steel discs on each side of the diff. Padded calipers grab the discs, and molded disc guides on the chassis help keep the parts lined up for sure stopping. That good stuff is offset by cost-cutting cheesiness in the brake linkages; they are merely music-wire with Z-bends. Brake bias may be adjusted by repositioning screw collars on the linkages.

Power gets from the diffs to the wheels via dogbones, and metal-shielded ball bearings are used throughout. New to the 7.5 series are 17mm hex hubs that permit any brand of wheel to be used with the car; older models had 19mm hexes that limited wheel options.



The plastic spur gear didn't fail! Note the brake rotor guides on the chassis.

SUSPENSION AND STEERING. The Sports' aluminum shocks are attractively blue-anodized and conventionally constructed with volume-compensation bladders beneath the caps and bottom-loaded, factory-installed seals. Kyosho includes its homebrew "medium" green oil to fill the shocks.

The shock towers are 2mm-thick aluminum plate with six locations for each shock, while the typically thick, lower suspension arms each offer two shock positions. The arms also have droop screws for down-travel adjustments—no need for messy, internal shock-spacer fiddling. Threaded upper links make rear camber adjustments possible (albeit with some minor disassembly); likewise, the Sports' front upper wishbones use short lengths of threaded rod to facilitate camber changes. Cast steering

arms, plastic C-carriers and plastic rear-hub carriers complete the suspension system.

Kyosho assembles the Sports' servo-saver for you; it is the usual cam-and-spring bell-crank arrangement. It's adjustable, but good luck turning the knurled adjustment wheel once you've installed it. An aluminum drag plate turns on bushings and provides three Ackerman positions for the threaded tie rods. The use of threaded rods in lieu of turnbuckles is an acceptable cost-cutter, but the cheap Z-bend wire linkage that joins the bellcranks to the steering servo really doesn't belong on an 1/8-scale buggy.

ENGINE AND ACCESSORIES. The Sports includes Kyosho's latest GS-21R pull-start engine, which wears a new, larger-surface-area heat-sink head. The engine breathes through a very nice foam air filter, and Kyosho even includes a wet-weather cover for it. Exhaust is routed to the great outdoors (take that, Mother Nature!) via a bolt-on manifold and an unusual, multi-piece cast tuned pipe. A 2-shoe clutch engages a steel clutch bell, and the engine is fed by a 125cc fuel tank that is more than a plastic box. It has a neatly integrated drip channel that routes spilled fuel out through the bottom of the chassis, and a clever splashguard keeps oily fuel out of the front brake system.

BODY, WHEELS AND TIRES. The Sports' attractive 10-spoke wheels are molded in the same vivid green as the dual-element rear wing. Medium-compound W-5651 multi-pin tires are included, but foam inserts are not. The body is the same as on Kyosho's other MP-7.5 models, and it's arguably the best-looking stock buggy body going. I had mine painted by Zegers RC Grafixx.

BUILDING & SETUP TIPS

Since Kyosho assembles all three of the Sports' diffs for you and even installs them on the chassis, building time is significantly decreased, but there's still plenty to build! It will go more easily if you follow these tips.

LOSE THE Z-BENDS. While you're picking up your Sports at the hobby shop, spring for an OFNA throttle-linkage kit and a spare linkage slider to replace the Z-bend brake linkage, and get an OFNA steering-linkage kit to replace the Z-bend steering linkage.

ADD FOAM INSERTS. The stock tires will work much better with foam installed; I like Pro-Line's 6195-00 "firm" inserts, but any insert will be an improvement on "flat" tires.

STEP 12. Install the camber pivots now instead of waiting until step 15. It's more difficult to install the pivots after the shock tower has been installed, as the manual suggests.

STEP 15. According to the parts legend, the 3mm E-rings are black, but they're actually silver (at least, they were in my kit). Match the E-clips to the scale drawing instead of relying on color, and you'll be sure to grab the right E-clips.

STEP 38. The "Collar (black)" required for shock assembly is easily mistaken for a black metal washer. It's actually a plastic washer from the shock parts tree.

STEP 40. The preload collars require 3x12 screws, and the kit includes small- and large-head versions. Use the small-head screws.

THE CLASSIC NITRO TIP. Apply thread-lock to all the linkage setscrews, engine-mounting screws, manifold bolts and any other screws that thread into metal parts.

YOU'LL NEED

- Transmitter and receiver
- Steering and throttle servos
- Receiver battery
- Fuel
- Thread-locking compound

FACTORY OPTIONS

- Swaybar sets (F/R)—Item nos. IFW104/IF117.
- Front universal-joint axles—IF125.
- Universal-joint center shaft—IFW13.
- SP FEMCA-legal tuned pipe—IFW37.
- Hard-anodized chassis—IFW101.
- Duralumin engine mount—IFW102.
- Front rod brace—IFW112.

Futaba 3PDF Transmitter and receiver

This is my new favorite radio, but not because of its computer features. Believe me, I do appreciate the 3-model memory, digital trims and adjustable



exponential, endpoints and 3-channel capability, but what I like best are the 3PDF's comfortable case design and perfectly sculpted rubber grip. For me, it's just the best-feeling radio out there. I also used the 3PDF's included 3-channel R123F receiver.

Additional items used to complete and operate the Inferno MP-7.5 Sports:

Futaba S9450 digital steering servo



Futaba S3003 throttle servo

Team Orion Pro 1100 NiMH receiver pack

Byron 20-percent-nitro race fuel

DuraTrax D-cell glow-starter

I don't think I've ever had a hard-to-start Kyosho engine, and the Inferno Sports' GS21R was yet another to pop to life on the first pull. After squirting around a parking lot for a few fat tanks to break the engine in, I leaned the needles out for good (but not maximum) power; better to run a little rich when you plan to play for tankful after tankful.

With all systems "go," I headed for the dirt. Even with

conservative needle settings, the GS21R engine had no trouble getting the Inferno to spray roost from all four tires. Although the GS21R is a relatively "mild" engine, any .21-powered machine is a powerhouse compared to a .12-powered car, and unless you're used to driving Italian-engine full-race nitro buggies, you won't find the Inferno Sports lacking in power.

Thanks to the mighty Futaba S9450 steering servo I chose, the Sports turned with authority and had all the steering you would expect of a top-shelf racing machine. Many entry-level 1/8-scale buggies feel ponderous in the turns, but the Sports felt quick and light—almost like an electric buggy. Still, the Sports could have handled even better if it had had foam inserts in the tires. In hard corners, the tires tended to fold over and grab instead of letting the car drift, and in the tightest turns, this caused the diffs to unload to the unweighted inside wheels. Braking to get the car loose before squaring the turns helped, and the Inferno's stoppers worked well, even with standard-servo power.

The test site's jumps were a little tame for 1/8-scale buggy action, so I broke out the plastic skateboard ramps we use for photo shoots and went for hang time. The Sports blasted off the ramp with about 6 feet of air and cleared over 40 feet between ramp and touchdown, and it repeated this feat at least 30 times without

a break. It occurred to me that I really should temp the engine after all those full-throttle ramp approaches; the GS21R was touching 350 degrees, even though it wasn't leaned out for maximum performance. I decided it was time to give it a break before it gave me a break, if you know what I mean. Although the engine showed no signs of performance loss, constant running at 350 degrees (a full 100 degrees over what is typical) just isn't good for any engine.

While the Inferno rested, I gave it a once-over for wear and tear. I had completely forgotten about the plastic spur gear, which was surely getting abused by hard throttle-on jump landings. I was surprised and pleased to see it still intact with plenty of life left in the teeth. The bottom of the chassis had the usual scratches and scuffs, and some grass got pinched between the tires and wheels, but nothing was bent or broken.

THE VERDICT

I'm going to solve that engine-heating problem once and for all, but in stock trim, it's a good idea to rest the Inferno between tankfuls (that's a good idea for any nitro engine, really). Overall, the Inferno MP-7.5 Sports is a very good buggy (hot engine notwithstanding). It handles as well as its world-championship heritage would have you expect, and all the parts are of high quality. But as I filled in the blanks on the competition chart, I discovered that performance comes at a price, and you'll pay more for an Inferno Sports than some better-equipped buggies. But those buggies don't hold five IFMAR World Championship titles. When play time is over, a few upgrades will make the Inferno MP-7.5 Sports a force on the racetrack that other machines will find hard to follow. ■

YOU WON'T FIND THE SPORTS LACKING IN POWER.



LIKES

- Handles like a full-race Inferno MP-7.5.
- Drive train arrives factory-assembled.
- New 17mm hex hubs accept all brands of wheels.
- Roomy dual-compartment radio box.

DISLIKES

- Pricy, compared to similar kits.
- No universal-joint axles.
- Plastic spur gear could be a long-term liability.

SOURCE GUIDE

BYRON ORIGINALS (712) 364-3165;
www.byronfuels.com.

DURATRAX Distributed by Great Planes;
www.duratrax.com.

FUTABA Distributed exclusively by
Hobbico/Great Planes;
www.futaba-rc.com.

GREAT PLANES (800) 682-8948.

KYOSHO Distributed by Great Planes;
www.kyosho.com.

OFNA RACING (949) 586-2910;
www.ofna.com.

PRO-LINE (909) 849-9781;
www.pro-lineracing.com.

TEAM ORION (714) 694-2812;
www.team-orion.com.

ZEGERS R/C GRAFFIXX (561) 988-5411;
repaintman@aol.com.

THE COMPETITION

MODEL	CHASSIS	BALL BEARINGS	DRIVE AXLES	SPUR GEAR	RADIO SYSTEM	STREET PRICE**	REVIEWED
DuraTrax Axis RTR	3mm aluminum	Shielded	Universal/dogbone	Plastic	Hitec Lynx	\$499	3/00
Kyosho Inferno MP-7.5	3mm aluminum	Shielded	Dogbones	Plastic	Not included	\$490	2/02
GS Racing Storm RTR	3mm aluminum	Shielded	Universal/dogbone	Steel	JR XR3	\$560	11/01
OFNA Hyper 7 RTR	3.5mm aluminum	Shielded	Universal/dogbone	Steel	Airtronics Blazer	\$524	10/01*

*Price varies with dealer. Kit version was reviewed in RC Nitro.



Weird, Wild Projects

STEP RIGHT UP! Witness RC project vehicles like you've never seen before! An off-road truck that prefers the street, against all that is natural! See with your own eyes the budget beginner buggy that blasts boisterously beyond the legal speed limit! Experience the nitro truck that treads on sand, with color unknown to aluminum! All real! All true! All

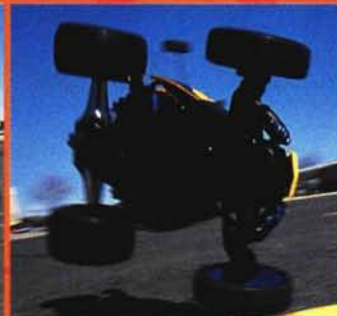
here! Yes; step right up, ladies and gentlemen, to see what happens when imagination and the aftermarket meet an HPI RS4 MT, a Tamiya Mad Fighter and a Traxxas Nitro Rustler to combine in ways as yet unseen in human history!



MUTANT MACHINES

click trip RCCARACTION.COM

DOWNLOAD VIDEO OF ALL THREE PROJECT CARS IN ACTION AT WWW.RCCARACTION.COM





I'VE NEVER BEEN ONE TO FOLLOW THE RULES, especially when it comes to what you should and shouldn't do with RC cars. Take the HPI Nitro RS4 MT, for example. The MT stands for monster truck—a vehicle that is meant to be driven off-road over rocks, dirt, grass, etc. Well; so much for that—I've transformed HPI's off-road machine into a street carver with a lowered stance and Panther slicks. Conventional wisdom also dictates that 1/10-scale vehicles are meant for no more than .15 power. And though the Nitro Star .15 included with the MT puts out decent power, I knew I could do better. With the help of New Era's .21-conversion kit, I was able to slip in an 8-port Megatech SH .21 on-road race engine. Can I get a "Hell yeah"?

HPI NITRO RS4 MT BY GREG VOGEL

STREET SPEED MT



<< 1



<< 2



<< 3



Mutations that made a difference

MEGATECH SH .21 ENGINE.

The engine installation was pretty easy, thanks to a New Era .21 conversion kit. The brutal power of the big-block engine instantly tripled (at least) the MT's power output.



HPI 2-SPEED MT TRANSMISSION.

HPI's 2-speed is usually a drop-in item, but I had to do some modifying to get it to work with the .21 engine. The 2-speed kit includes an extended, screw-on pilot shaft for the long, two-gear clutch bell. But because the Megatech SH engine already has a built-in pilot shaft, I couldn't use this critical part, and the Megatech SH pilot shaft was too short for the two-gear clutch bell. The solution was an OFNA engine-shimming kit with a pilot-shaft extension tube. It took some time to shim it all up, but everything came out factory in the end.

Behind the wheel

This .21-equipped Nitro RS4 MT is a real powerhouse; when I nailed the throttle, all four wheels lit up as the power from the .21 broke the sticky slicks free despite their tenacious traction. Then, as the rear tires grabbed, the fronts lifted off the ground for a second as the truck launched. Second gear arrived in a hurry, accompanied by a pull to the left as the engine

torque became surprisingly apparent. Before I knew it, the MT's radar-confirmed 42mph top speed had it almost out of sight, and I had to let off the throttle to turn it around for another blistering speed run. That sums up the driving experience behind the wheel of the Street Speed MT—just an absolute speed fest through parking lots and down side streets.

But there was a price to pay; the powerful Megatech SH engine took its toll on the MT's drive-train parts. The first victim was the rear ball diff; after four tanks of fuel, it felt as if I had built it with rocks instead of balls. Even when fully tightened, the grippy Panther slicks and .21 engine were able to slip the diff severely enough to groove the rings. I swapped the ball diffs for the stock gear differentials and got through another six tanks of fuel before the teeth on the cast pinion-bevel gear folded over—even when shimmed for a tight mesh. I finally cured the diff-meltdown problem with HPI's hardened-steel gear set.

I'm pretty stoked on the Street Speed MT, now that it stays together. This project has every base covered: purple parts for the driver who wants style, aluminum goodies for the "Damn, I broke it again" racer and speed for the adrenaline junkie. No matter which category you fall into, get working on your MT project; I promise you won't be disappointed with the results.

<< 1 The center gear mount is a nice piece of machine work. By removing the four screws, you can remove the 2-speed transmission for maintenance or gear changes.

<< 2 Aluminum, aluminum and more aluminum. All this stuff is "must-have" if you're into eye-candy parts. The GPM C-hubs are also nice to have because their ball bearings for the upright kingpins allow much smoother steering.

<< 3 Fun with purple aluminum OFNA washers.

<< 4 If you flip the rear arms and switch the hub carriers around, you can choose between wheelbases. I went with a long wheelbase for stability during speed runs.

<< 5 Check out the Rad-Tech Racing Sirius wheel; these babies look hot standing still.



<< 4



<< 5

THE STUFF

KIT

- HPI Nitro RS4 MT
- item no. 551;
- \$279.99.

CHASSIS

GPM RACING

Aluminum

- * Rear tower brace
- NMT4031; \$25.
- * Skidplate and bumper
- NMT4003; \$40.

HPI

- * Carbon-fiber upper deck
- 73017; \$42.

MEGATECH

Aluminum

- * Main chassis
- MTC22151; \$34.95.
- * Arms (F/R)
- MTC22161; \$21.95;
- MTC22163; \$22.95.
- * Lower front arm mount
- MTC22147; \$14.95.
- * Center gear mount
- MTC22156; \$27.95.
- * Front mount plate
- MTC22150; \$14.95.
- * Rear lower arm mount
- MTC22148; \$14.95.
- * Bellcrank steering set
- MTC22158; \$15.95.
- * Aluminum/steel handle set
- MTC22164; \$14.95.

OFNA

Aluminum

- * L-shape servo arm
- 10752; \$6.95.
- * Servo arm
- 10732; \$6.95.

RPM

- * Super-duty rod ends
- 73360; \$4.95.

SUSPENSION AND STEERING

GPM RACING

Aluminum

- * Tower (F/R)
- NMT4028; \$20;
- NMT4030; \$25.
- * Bearing C-hub
- NRS4020; \$40.

HB RACING

- * Purple threaded shocks
- 25011; \$30.

HPI

- * Steering upright
- 72065; \$32.

LUNSFORD

- * Titanium turnbuckle set
- 2181; \$32.50.

DRIVE TRAIN

HG

- * Wheel hexes
- 8110; \$19.95.

HPI

- * Center universal (F/R)—72082 \$20; 72083; \$20.
- * Ball-diff kit
- A958; \$38.
- * 2-speed tranny
- A912; \$90.
- * Brake disc
- A844; \$12.99.

MIP

- * Shiny CVD kit (F/R)
- 1274; \$37.50.

ELECTRONICS

AIRTRONICS

- * M8 radio
- 90280; \$269.99.
- * 94755 servo
- 94755Z; \$114.99.

NOVAK

- * XXtra receiver
- 2627; \$94.99.

OFNA

- * 1000mAh NiMH brick pack
- 10203; \$34.95.

ENGINE AND ACCESSORIES

DURATRAX

- * .21 tuned pipe
- DTXG1000; \$24.99.

GS RACING

- * Fuel tubing
- GSCRE4TBL; \$5.95.

HPI

- * Collet—A844; \$1.90.

MEGATECH

- * SH .21 8-port on-road engine
- MTCPT-08; \$189.95.

MUGEN

- * Silicone coupler
- 80414; \$11.99.
- * Manifold
- C0950; \$49.99.

NEW ERA

- * .21 conversion for non-pull starter
- HTM110; \$69.95.

BODY, WHEELS AND TIRES

PANTHER

- * Burner slick
- PT450; \$15.95.

PRO-LINE

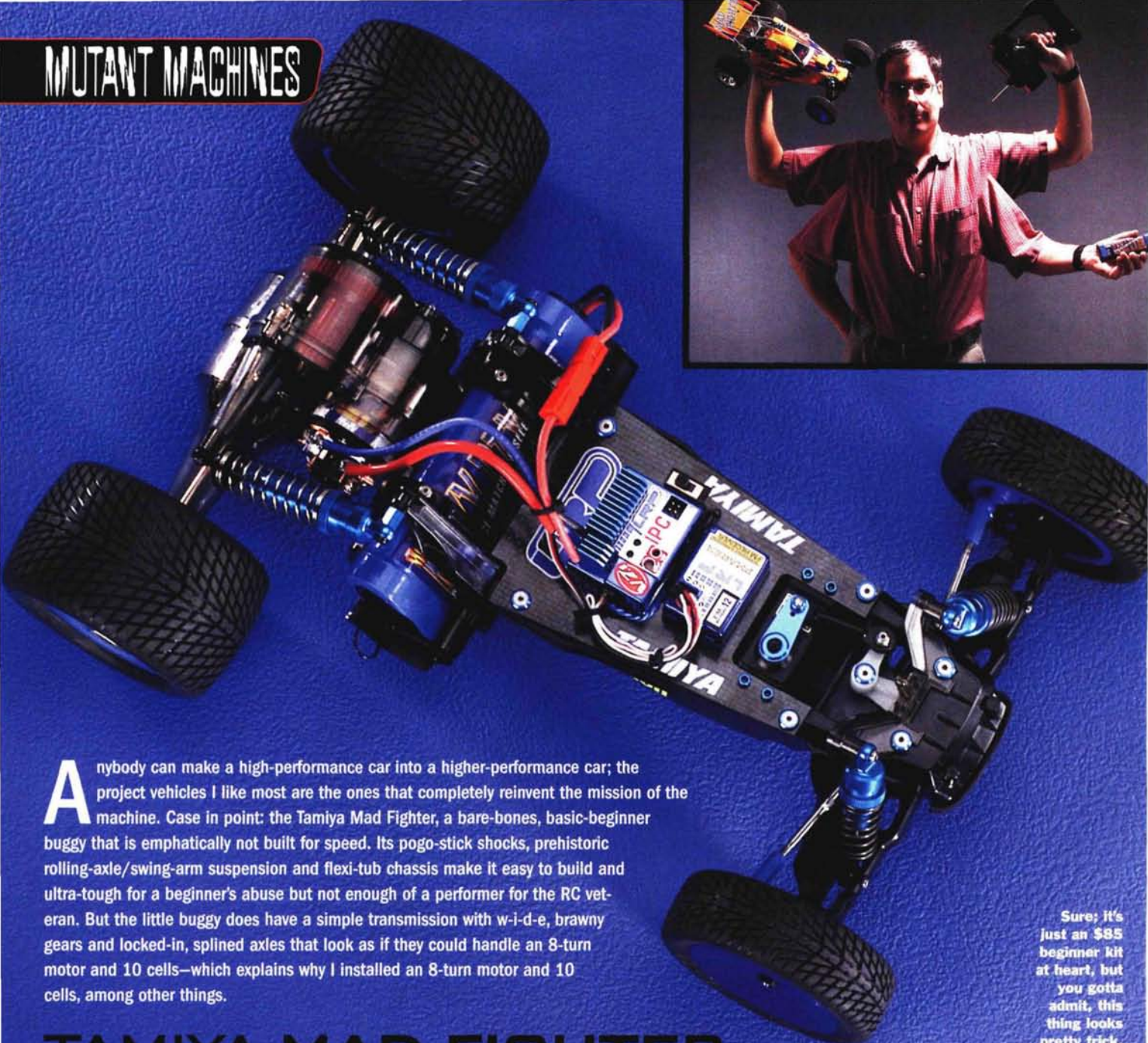
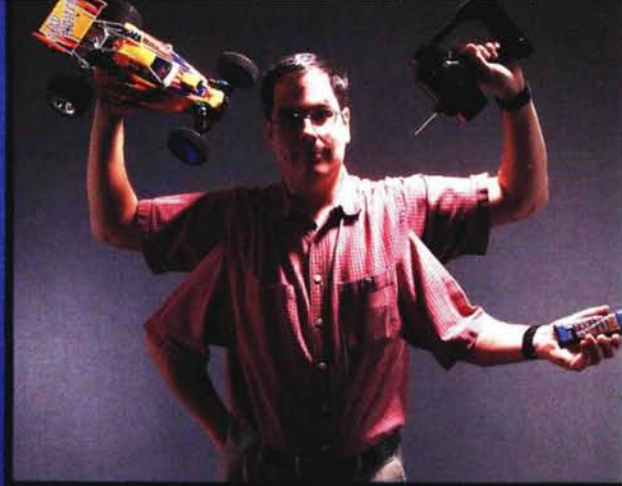
- * 2000 Mercedes-Benz ML430
- 3091-00; \$23.

RAD-TECH RACING

- * Sirius wheel (set of four)
- RAD-S0106; \$120.

TOTAL COST
\$2,234³²

MUTANT MACHINES



Anybody can make a high-performance car into a higher-performance car; the project vehicles I like most are the ones that completely reinvent the mission of the machine. Case in point: the Tamiya Mad Fighter, a bare-bones, basic-beginner buggy that is emphatically not built for speed. Its pogo-stick shocks, prehistoric rolling-axis/swing-arm suspension and flexi-tub chassis make it easy to build and ultra-tough for a beginner's abuse but not enough of a performer for the RC veteran. But the little buggy does have a simple transmission with w-i-d-e, brawny gears and locked-in, splined axles that look as if they could handle an 8-turn motor and 10 cells—which explains why I installed an 8-turn motor and 10 cells, among other things.

Sure; it's just an \$85 beginner kit at heart, but you gotta admit, this thing looks pretty trick.

TAMIYA MAD FIGHTER BY PETER VIEIRA

VERY MAD FIGHTER



<< 1



<< 2



<< 3



Mutations that made a difference

HB RACING THREADED-BODY SHOCKS

There was no way the Mad Fighter would ever get the power of 10 cells and an 8-turn hand-wound to the ground with its stock, undamped shocks, so a set of HB touring-car shocks found a home at the front of the buggy, and HB's T-Maxx models went into the rear. Since the shocks had to control the motion of the transmission, axles, wheels and motor, I went for fairly heavy rear damping.

PENGUIN GRAPHITE UPPER DECK

I drew a sketch of the upper deck I had in mind and then handed over the design duties to "4x4" columnist Kevin Hetmanski for polishing on AutoCAD. Kev emailed the file to the guys at Penguin RC, and they sent back the beautiful graphite upper deck you see here. The deck makes installing the receiver and ESC possible, and it's a great visual.

PRO-LINE ROAD RAGE TIRES

I wanted to be sure that I erred on the side of too much rubber on the road, so I went with Pro-Line's truck treads in the rear. In addition to providing kung-fu grip, they increased the buggy's rollout considerably compared with the 1.9-inch stock tires. The rollout factor increased even more as the tires "grew" due to centrifugal force during the speed trials.

Behind the wheel

I had complete confidence in the Mad Fighter's ability to channel the power of 10 cells and an 8-turn D4 mod motor, but I didn't have much confidence in its ability to hold a line. The Fighter's Jurassic-era front suspension produces radical amounts of camber change and bump-steer, and its relatively short wheelbase contributes little stability. The Mad Fighter

tracked well as I slowly rolled on the throttle up to about 30mph, but travel got sketchy as I tried to reach full throttle before passing the radar gun. The heavy damping that helped the car hook up made it very slow to respond to steering corrections, and the car seemed to have a tractor beam locked onto the curb that framed our test strip. The radar gun indicated 49mph when the Mad Fighter went up and over the shallow beveled curb, cartwheeling spectacularly into a pile of leaves and finally coming to rest under a bush. Amazingly, the car emerged unscathed except for the front shock tower, which had slid out from under its mounting screws. After reinstalling the shock tower and freshening the batteries, the Mad Fighter made another pass at the radar. This time, everything went perfectly, and the flying Fighter unloaded every electron into the Trinity D4. With rear tires ballooning and dust devils in its wake, the silliest project car I've built (so far) turned in an impressive 57.8mph run. It's too bad the Mad Fighter's gearing is fixed, or I'd shoot for 60!

<< 1 To give the Mad Fighter a longer, aggressive look and to get more downforce over the rear wheels, I added carbon-fiber extensions to the wing mounts.

<< 2 HB threaded body shocks were just the ticket for style and adjustability. Note the Associated Dynamic Strut steering knuckle and the washer used to elevate the tie rod to minimize bump steer. It did help, but the Mad Fighter still had major suspension geometry shortcomings.

<< 3 The guys said I should leave the Pro-Line dish wheels white; I dyed 'em blue. Street tires don't get any cooler looking than Pro-Line's Road Rage models.

<< 4 Well, look what we have here: a cut-down Trinity Maxx Paxx hides beneath the custom-graphite upper deck from Penguin RC.

<< 5 The Mad Fighter's translucent tranny makes it easy to see the Trinity D4 that makes those big gears spin so quickly. The tranny did well with 10 cells; I wonder if I could squeeze in 12 ...?



<< 4



<< 5

KIT

Tamiya Mad Fighter
—item no. 58275; \$85.

CHASSIS AND SUSPENSION

TEAM ASSOCIATED

- * Dynamic Strut in-line steering arms —8441; \$4.
- * Dynamic Strut aluminum axles —8443; \$10.

HB RACING

- * Threaded Maxx shocks (pair) —25010; \$25.
- * Threaded touring-car shocks (pair) —24011; \$20.

LUNSFORD

- * Turnbuckles, 2¼-in. (pair) —1071; \$8.99.

PENGUIN

- * Graphite upper deck —custom one-off; \$50.

LRP

- * Ball ends, blue (set of 12) —73375; \$5.

DRIVE TRAIN

DURATRAX

- * Bearings 11x5mm (pair) —1547; \$3.

ELECTRONICS

DURATRAX

- * Powerpole connectors (pair) —2300; \$3.

FUTABA

- * S3003 servo—S3003; \$11.99.

KO PROPO

- * EX-11 Presto transmitter —KOP8002; \$159.99.

LRP

- * V7.1 ESC—LRP8069; \$140.
- * Phaser receiver—LRP8401; \$110.

OFNA

- * Aluminum servo horn —10731; \$6.95.

TRINITY

- * D4 8-turn motor—D4108T; \$65.
- * Maxx Paxx—RC5896; \$50.

WHEELS AND TIRES

PRO-LINE

- * Agitator rear wheels for Traxxas Stampede (pair)—2652-01; \$11.
- * Wide cone dish B2/B3 buggy front wheels (pair)—2634-00; \$7.
- * Road Rage T 2.2 truck tires (pair)—1062-00; \$19.
- * Road Rage buggy front tires (pair)—1101-00; \$13.

TOTAL COST
\$819.92



Who hasn't owned or at least driven a Nitro Rustler? Its easygoing personality, great performance and ability to take severe punishment make the Nitro Rustler unparalleled among nitro stadium machines, as far as I'm concerned. But the electric and nitro-powered versions of its stablemate, the Stampede, seem to get all of the aftermarket attention. I decided it was time to step up to the plate (as in aluminum plate, get it? Uh; never mind) and build a full-dress version of the Nitro Rustler. Using HG chassis and suspension components as a foundation, I set out to create the ultimate sand-thrashing Rustler while retaining the easygoing, push-button personality of the stock truck.

TRAXXAS NITRO RUSTLER BY BOB HASTINGS

QUICKSAND



<< 1

<< 1 I kept the Pro .15 engine but installed an MIP 360-degree stinger exhaust. Additional cooling for the Traxxas engine comes courtesy of the Megatech "platinum ice" head. Traxxas Big Bores control the damping in the front and rear, and I upgraded the stock drive axles to MIP shiny CVDs.

<< 2 Ah; there's nothing better than seeing a bunch of carbon fiber accented by anodized aluminum.

<< 3 MIP's second-generation onboard temperature gauge makes sure things stay cool.

<< 4 Call it what you want: copper, orange, salmon, or Jif; the HG anodizing is a unique color and a cool change of pace from the typical blues and purples.



<< 2



Mutations that made a difference

PRO-LINE SAND PAW TIRES

If my only goal was to build a truck that could move out on sand, I could have installed these tires on a stock Nitro Rustler and claimed "Mission accomplished." The paddles move more beach than a sandcastle-building contest.

MIP CVDs

Beach sand is nasty stuff, and it's known for binding up close-tolerance parts. I envisioned the Rustler's stock slider axles quickly freezing up when exposed to the stuff, so MIP CVDs replaced the sliders. The shiny CVDs just plain look cooler, too—no harm in that.

Behind the wheel

I didn't know what to expect; out of all the RC vehicles that I've built, I've never owned a purpose-built sand machine. I set up at the beach, zapped the

truck with the EZ-Start and set the truck down for a slow pass or two to warm up the engine. The slow-pass plan was quickly displaced by my eagerness to see "Project Quicksand" live up to its name. I brought the truck up to about ½ throttle and made a long arc through the soft sand. As I straightened out, I buried the throttle for all it was worth. Plumes of sand rose high in the air from the rear paddles as the Rustler spooled up to maximum power. The truck rocketed across the beach, hit a small divot in the sand and went into a full-on wheel stand!

About the time I convinced myself that I was really good at this sand stuff, I managed to get the rear end loose in a turn. When turned sideways, those big fat sand paddles provide the optimum in spinout technology—call it a learning experience.

As long as throttle is fed in with steering inputs, the truck is remarkably stable. I had figured that the deep sand would be quite restrictive on the truck's speed; it was a big surprise to see how sprightly the truck builds speed and skims over the beach rather than plowing through it. ■

SOURCE GUIDE

AIRTRONICS (714) 978-1895; www.airtronics.net.

DURATRAX Distributed by Great Planes, (800) 682-8948; www.duratrax.com.

FUTABA Distributed exclusively by Hobbico/Great Planes, (800) 682-8948; www.futaba-rc.com.

GPM Distributed by Hobby Etc. Inc., (603) 595-8549; www.hobbyetc.com.

GS RACING Distributed by Horizon Hobby Inc.

HB RACING (562) 468-1121; www.hotbodiesonline.com.

HG (518) 782-9255; www.1hg.com.

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HORIZON HOBBY INC. (217) 355-9511; www.horizonhobby.com.

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KO PROPO USA INC. (310) 532-9355; www.kopropropo.co.uk.

LUNSFORD RACING (541) 928-0587; www.lunsfordracing.com.

LRP Distributed by Team Associated.

MEGATECH Distributed by America's Hobby Center, www.megatech.com.

MIP (626) 339-9007; www.miponline.com.

MUGEN USA (949) 707-5607; www.mugenracing.com.

NEW ERA MODELS (603) 888-4453; www.neweramodels.com.

NOVAK ELECTRONICS INC. (949) 833-8873; www.teamnovak.com.

OFNA RACING (949) 586-2910; www.ofna.com.

PANTHER PRODUCTS INC. (866) 700-8473; www.panthertire.com.

PENGUIN R/C (714) 630-9015.



<< 3



<< 4

THE STUFF

KIT

Traxxas Nitro Rustler ARR
—item no. 4404; \$279.

CHASSIS AND SUSPENSION

HG

Machined aluminum

- * Body posts—4350; \$9.95.
- * Chassis—3050; \$59.95.
- * Arms (F/R)—3450; \$39.95; 3452; \$39.95.
- * Front steering blocks—4150; \$39.95.
- * Rear bulkhead—2150; \$49.95.
- * Rear hub carriers—2360; \$39.95.

TRAXXAS

- * Big Bore shocks (F/R)—2660; \$30; 2662; \$30.
- * Carbon-fiber upper deck—4442x; \$50.

DRIVE TRAIN

MIP

- * Shiny CVDs—1217; \$40.

ELECTRONICS

HITEC

- * 605BB servos—HS-605BB; \$70.

JR RACING

- * R1 radio—JRP3160; \$399.95.

MIP

- * Temp gauge—2001; \$40.

NOVAK

- * Xtra receiver—2675; \$120.

ENGINE AND ACCESSORIES

MEGATECH

- * Cooling head—MTC22068; \$42.95.

MIP

- * Tuned pipe—3022; \$50.

BODY, WHEELS AND TIRES

PRO-LINE

- * Agitator wheels (F/R)—2653-01; \$12; 2654-01; \$12.
- * Sand Paws (pair)—1052-00; \$15.
- * Silverado body—3089-00; \$22.
- * Edge tires (pair)—8095-0; \$15.

TOTAL COST
\$1,507⁵⁵

PRO-LINE (909) 849-9781; www.pro-lineracing.com.

RAD-TECH RACING

www.radtechracing.com;
info@radtechracing.com.

RPM R/C PRODUCTS (909) 393-0366; www.rpmrcproducts.com.

TAMIYA AMERICA INC.

(800) 826-4922; www.tamiyausa.com.

TEAM ASSOCIATED (714) 850-9342; www.teamassociated.com.

TRAXXAS CORP. (972) 613-3300; www.traxxas.com.

TRINITY PRODUCTS INC.

(732) 635-1600; www.teamtrinity.com.

BY GREG VOGEL AND DEREK BUONO



Team Losi Triple-X4

According to our SoCal Raceway spy source, Team Losi drivers are testing a new Triple-X4 prototype. No official word from Team Losi yet, but our guy tells us that the four-wheeler has a new body and new suspension components, and it's putting down faster lap times than the Double-X4. We bet its drive train will be the same as the Triple-XS's.

Fantom makes music

Troy Schroeder, motorman at Fantom Racing, does more than wind motors:

he sings, too. Some may have seen his forbidden dance at the track, but most don't know that he is the lead singer of a Michigan band called "Dirt Nap." You'll hear some of their music on our website as the soundtrack of our new videos.



SITE SEEING



www.onlinemetals.com

If you want to fabricate your own parts but have a hard time finding the materials you need in small enough quantities, here's the website you need. You can get flat-stock aluminum, nylon, Teflon, brass, titanium, steel, carbon fiber and more in just about every shape and size you can think of.

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COM BULLETIN BOARD

Stock racer, good and cheap ESC?

BULLFROG: Get the Novak Explorer 2 or the Novak Fusion. **PURIBONG:** for about \$55 you can get DuraTrax Streak ESC.

AE T3 Forum

GRATEFUL: Any pro tips that would help for punch?
KILRUF: Get a P2K motor with some "H" brushes. 87/19 gearing. Possibly 87/20. You could try a titanium top shaft.

RC Drag Racing

MICRO MAN: Any ideas on how I should set up my RC10LSO?

DRAGMASTER:

Keeping the car simple is best if you're just getting started; 6 cells and a stock motor is plenty.

OFNA Hyper 7 Pro

RYAN 123: Will the Hitec Digital 5645 that puts out 133 oz. of torque at a .18 transit steer well? **JONRULLAN:** Ryan, the 5645 will do just fine.

BE HEARD!
LOG ON AT WWW.
RADIOCONTROLZONE.COM



Cyru, Brown sign up with Associated

Josh Cyrul (below right) is sticking with Trinity motors and bat-

teries, but he'll be strapping them into Associated

cars from now on. Josh joins longtime Losi guy Scott Brown (above), also new to Team Associated, and Barry Baker with the Nitro TC3—fresh from his Castle Hobbies Classic win.



NEW! Team Losi Off-Road Championship

Team Losi is proud to announce that it will hold the First Annual Team Losi Off-Road

Championships on April 12 and 13, 2002. The entry fee will include handout motors and spec tires for stock-class racers. The name of the overall winner will be engraved on a special award cup that will be passed annually from one winner to the next (with appropriate engraving). And of course, the entire Team Losi crew will help the racers out. Team Losi is known for its "It isn't all about the factory guys" attitude, so the event is sure to offer a good time to drivers of all levels.



What do you get when you have everyday sedan races at SoCal with big-name drivers?—Billy Easton, Barry Baker, Brian Kinwald, Chris Tosolini, Todd Hodge, Greg Hodapp, Curtis Schalt, Thad Gardner, Tony Phalen, Ron Rossetti, Mike Reedy, Tyree Phillips, Gary Owens,

TACO BELL NATS

and Dwayne Silva.

You get the Taco Bell Nats. Why the name?

Obviously, Taco Bell is just down the street and everyone goes to eat there. It's all in good fun, but the racing gets pretty serious. Brian won eight of the 10 club races in five weeks;

Barry won the other two.



RUMOR MILL

HPI DEVELOPING NEW TRUCK PLATFORM

Rumors are that HPI is working on a new truck, but we don't have any details on exactly which type of machine it will be. We're rooting for a serious 2WD competition truck in electric and nitro versions, and we'll keep you posted.

SPEED SHOP



HARDCORE RACING COMPONENTS Track cones

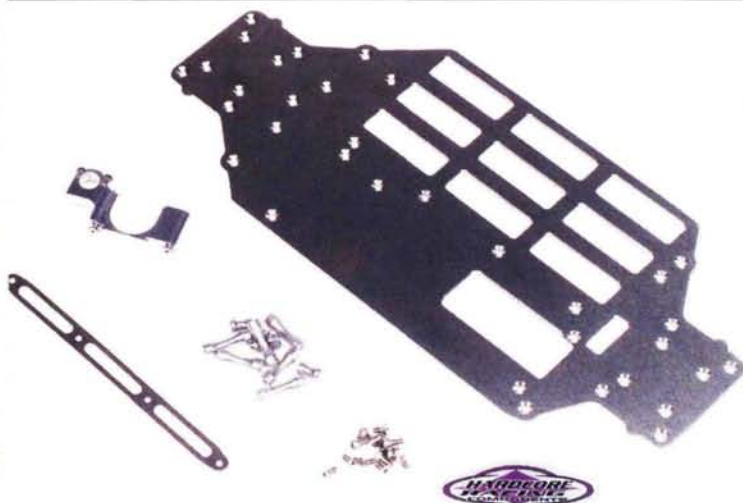
Autocross racing is popular among full-scale car enthusiasts, since all it takes to set up a track for a race against the clock are a parking lot and orange cones. RC autocross is fun, too, and it's a great way to see just how good a driver you really are. But full-size cones aren't the hot setup for RC, and racing around soda cans just looks lame. Hardcore now offers mini cones that look just like the real things and are molded in soft vinyl so they won't damage any vehicles. They also make great reusable ice-cream cones.

Item no. HCR-00005;
\$28/set of 4.
Hardcore Racing Components
(661) 294-5032;
www.racinghardcore.com.

HPI Stage 3 engine kit

Designed to increase power, extend engine life and improve cooling with HPI's .15 FE or .12E engines, this upgrade kit is available from Buy HPI on HPI's website. The kit's 5.5mm carb has a larger opening for better top-end performance and an adjustable low-speed needle for complete tunability. The ABC piston and sleeve deliver more consistent performance than a nickel-plated sleeve, and the connecting rod is lighter than the stock rod. The purple heat sink head—a nice finishing touch—allows the engine to run cool even in warm weather. Stage 1 (includes only the carburetor) and Stage 2 (includes carburetor, connecting rod, wristpin, piston and sleeve) upgrades are also available so you can increase the performance of your car to suit your abilities.

Stage 3 upgrade—item no. 92812-K; \$90.
HPI Racing (949) 753-1099; www.hpiracing.com.



HARDCORE RACING COMPONENTS 9-cell TC3 chassis

That's right! This titanium chassis has slots for 9 cells for crazy speed runs and Outlaw racing. The chassis has countersunk screw holes and smooth edges and is part of a kit that includes the parts shown here: a new motor/shaft bulkhead; center stiffening plate with posts; and the hardware needed to bolt these pieces to the chassis.

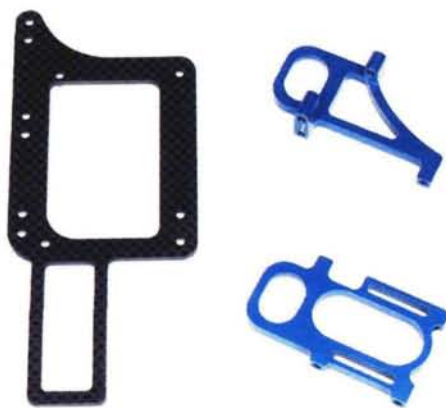
Right now, the kit is a special-order item, but it could become a regular production piece if demand is high enough.

Est. street price \$240; call for info.
Hardcore Racing Components (661) 294-5032;
www.racinghardcore.com.

R3 DESIGNS X2 Pod Conversion

This conversion for the Associated 10L3 is designed to keep more weight on the left rear wheel by placing 1 battery cell on the pod. It comes with two aluminum side plates that are 10mm longer and can be used with larger spur gears, and the axle adjusting holes are 0.09 inch lower for use with smaller diameter tires. In addition to increasing corner-exit speeds, R3 claims that the X2 Pod Conversion will improve durability, thanks to its 0.098-inch-thick carbon-fiber lower pod plate.

Item no. R3001B; \$80.
R3 Designs (802) 482-4743 (after 7p.m. EST);
R3DESIGNS@prodigy.net.



FACTORY TEAM Tire Adhesive

According to Associated, the Factory Team sticky stuff is a specially formulated CA glue designed to bond tires to rims strongly and join other areas that need to stick and stay stuck (we hope this won't include your thumb and a tire's sidewall). Item no. 1597; \$6.95.

Factory Team. Distributed by Team Associated (714) 850-9342;
www.teamassociated.com.

TRACK THREADS

TEAM XRAY Windbreaker

On those just-cold-enough-for-a-jacket race days, sport this dark blue nylon windbreaker for a little RC style. Embroidered XRAY logos on the front and back, a hideaway hood and a zippered front will keep you warm and looking good. It's available in small through double-XL for \$27.

Distributed by Serpent Inc. USA
(305) 639-9665;
info@serpent-usa.com;
www.serpent.com.



Back

UNDER THE HOOD

Scott Hughes
Team Associated
Factory Team T3

EQUIPMENT USED

Radio system: KO Propo Mars
Steering servo: KO Propo
ESC: LRP Quantum
Motor: Reedy 10x2
Gearing (pinion/spur): 18/87

Tires (F/R): Pro-Line
Blade/Holeshot
Foams (F/R): Pro-Line firm
Rims: Pro-Line Velocity
Body: Pro-Line GMC Sierra

SETUP

	FRONT	REAR
Caster	30 °	-
Camber	-2°	-1°
Toe-in/out	0°	(Toe/anti) 2°/3°
Ride height	Arms level	Bones level
Swaybar	-	-
Shocks body/shaft	1.02/1.02	1.38/1.32
-fluid	35WT	30WT
-piston	2	1
-spring	Silver	Silver
-mounting location (tower/arm)	d/g	e/c
Camber-rod location (tower/hub)	b	b/h



Yes, it's a stock FT3. We'd bug Scott about the missing E-clip on the bottom of the ball kingpin, but it's held in with a setscrew in the axle, and he really doesn't need the clip. Oh, well ... take a look at his mounting locations and give his setup a try.

After thoroughly going over Scott's truck, we came to one conclusion: it's stock. But you can use this view to see where Scott positions the shocks and rear camber rods.

The 6 degrees of Squirrel. Scott always has a special face to make for the camera, and the result is that you see his mug in almost every race coverage. As a special "farewell," we decided to reminisce with some of our favorite pictures of our furry friend (please hum "Time of Your Life" by Green Day as you look at these).

Driver: Scott Hughes

AGE: 25

SPONSORS: Pro-Line, Associated, Reedy, LRP, KO, MIP
LAST BIG WIN: 2000 Silver State Nitro Truck

FAVORITE TRACK: Pro-Line and the Dirt (Hemet Raceway)

BEST MOVIE SCENE: dog on the patio from "Joe Dirt"

FAVORITE TV PROGRAM: "Crocodile Hunter ... That guy rocks!"

WHICH SUPERHERO WOULD YOU BE? Handi-Man from "In Living Color"

FAVORITE CD: Christina Aguilera
WHEN I'M NOT

RACING/WORKING: I lounge with my wonderful girlfriend Lorinda and cruise around on my R-6 soaking up the scenery while hitting corners at high speeds.

RCCA: Refresh everyone's memory: how did you get the nickname "Squirrel"?

SCOTT: When I was 15 years old, I was pretty wild and did a lot of stupid things like running around naked, banging on hotel doors, stupid things on the track like out-of-control driving, especially down a lap at club races—you know, immature stuff. Darren Westman called everyone "Squirrel," and then when I joined Associated, I was the perfect candidate for main Squirrel because of my crazy behavior. The name stuck.

RCCA: What do you mean, "When I was 15"? Weren't you doing that stuff last year? Never mind. What's it like being involved with the development of new products at Pro-Line?

SH: It's a process. First, we work with hobby stores and look for their input as well as input from customers. Then Tim Clark, Todd Matson, Mark Pavidis and I sit down and review their requests and discuss our own ideas. It's a privilege to be a

Continued on page 136



Pro-Line is so proud to have Scott the Squirrel that it includes a huge (add sarcasm) Team Squirrel sticker on its sticker sheet (item no. 9915D).



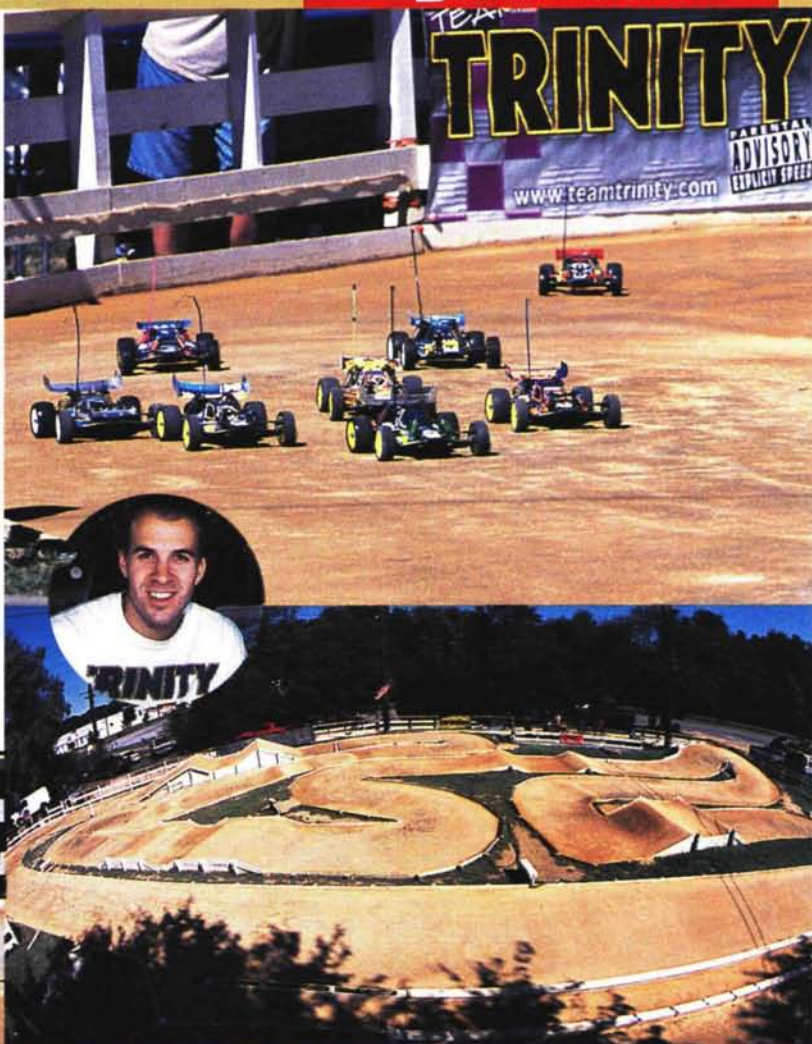
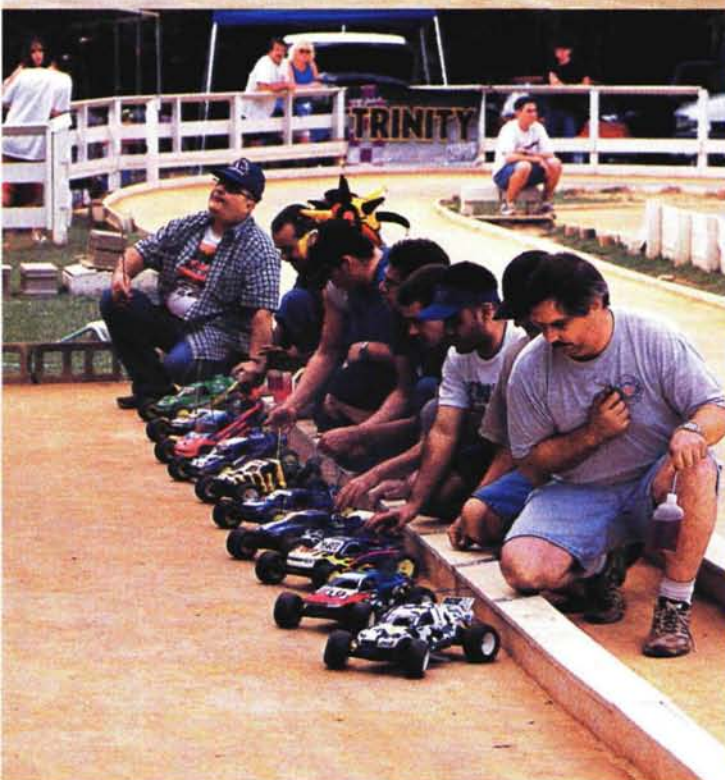
Trinity Off-Road Shootout

How racing should be

The East Coast may not have all the big-name drivers, but we still know how to race. Trinity held its annual Off-Road Shootout at Family Hobbies in Vineland, NJ. This big event featured two days of racing for a chance at the big trophies. It also offered the opportunity to race against one of the biggest names in RC: Matt Francis. For two days, the locals tried their best to beat him—sometimes with the help of setup advice that Matt had given them!

THE FINISH

The Trinity Off-Road Shootout was not another full-factory event in which the "little guys" had no chance of making the Main against the pro's. Instead, it was a great chance for RC racers who truly support the hobby to race with (and against) a factory pro whose main mission is to help everyone go fast. Family Hobbies and Trinity put on an event that every track would do well to emulate. This kind of format could ensure the continued success of any track. Imagine the thrill of racing a world champ who actually helps you with your setup!



WINNERS

FINAL	DRIVER	MANUFACTURER	VEHICLE
2WD STOCK			
1	Billy Kibler	Losi	XXX
2	Rob Betts	Associated	B3
3	Vincent Nocella	Losi	XXX
STOCK TRUCK			
1	Dave Antos	Losi	XXXT
2	Angelo D'Alessandro	Losi	XXXT
3	Tim Powers	Losi	XXXT
4WD MOD			
1	Matt Francis	Losi	XX4
2	Dave Grabowski	Losi	XX4
3	Chad Phillips	Losi	XX4
2WD MOD			
1	Matt Francis	Losi	XXX
2	Chad Phillips	Losi	XXX
3	Todd Lewis	Losi	XXX
GAS TRUCK			
1	Rob Betts	Associated	FT GT
2	Brent Peterson	Associated	GT
3	Rob Caruso	Losi	XXXNT
MOD TRUCK			
1	Angelo D'Alessandro	Losi	XXXT
2	Dave Grabowski	Losi	XXXT
3	Todd Lewis	Losi	XXXT

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RACER NEWS

LAST LAP

The 2002 IFMAR Off-Road Worlds will be held in South Africa. If it were your call, where would the 2004 event be held and why?

The IFMAR Off-road Worlds should be split into four races in four locations such as Florida, New York, Michigan and California. That way, more people could attend (including me). I know I can't afford a ticket to South Africa to see an RC race!

—Jason Ford

I think it should be held in my country, Canada. I think that such a big event would make people in my area more aware of RC and realize that it is a great hobby. I would love to see IFMAR come to Canada. Also, Canada is next to the United States, so more amateur racers would be able to afford to travel here. South Africa is a long way away. —Ian Dunn

I would hold the Worlds in the heartland of America—Iowa. Why hold the Worlds in cornfield country? Well, I live in Iowa, and don't all racers want such a big race to come where they live? —Josh Silver

I would like it to be held in my backyard. Mom can make plenty of iced tea for everyone, and I might find someone who can actually help me dial in my suspension, since the instruction manual is of no help. —James Pelosi

Hawaii! Because everyone likes Hawaii and the hula girls aren't bad, either. —Kris Inman

NEXT MONTH'S QUESTION

Do pro racers' equipment and setup choices influence you, or do you run whatever works for you?

Respond by clicking "Last Lap" at www.rccaraction.com, or email your responses to gregv@airage.com.

5 QUESTIONS Continued from page 132

part of a company that acknowledges skill and talent and depends on and trusts me for my ideas and opinions. I also do a little work in the tool room helping to improve designs. I've helped Todd and Adam Epp with marketing layouts and designs—proofing, and giving input on existing designs. I think the more involved you are in a project, the better you make decisions.

RCCA: At big races, you're always racing the same guys. Is it always exciting, or is it, like, "Here we go again?"

SH: Lately, it's not like it was when I was up and coming. There were more people then. Maybe that's why I like to race all types of classes—nitro and electric. If you just race electric truck, for example, you'll see electric guys. With nitro racing, there are a lot of new people, and every time I go to a race, I meet more new people; plus, many electric guys are transferring to the nitro race scene. But it's still the top guys like Billy, Brian and Mark who always make the Main.

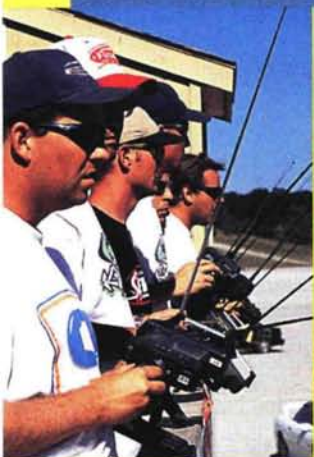
RCCA: What's your best race battle story?

SH: It was '94 or '95—the first year Masami came over for the Florida Winterchamps. It was an all-out battle throughout the race, but what sticks out in my mind is the track's off-camber corner. It was real slick like the Florida track usually is, but I almost pulled off a pass on the outside in the corner. The whole race was just great because Masami was in his prime, and there I was—faster—passing him on the outside of a tough corner.

RCCA: Rumor has it that you're putting your transmitter down and going to races only as a factory support member. Care to elaborate?

SH: I'm pretty much done with racing. I'll still be around at the track as a Pro-Line representative, but I won't be racing. Actually, I shouldn't say that. I might enter a few gas-truck races, but my main thing will be repping for Pro-Line, Ready and Associated. ■

BY KEVIN HETMANSKI



Roll-on deodorant? No:
Tim Long.



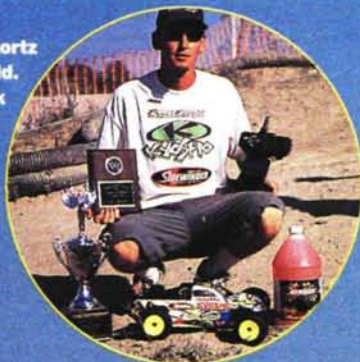
2001 KYOSHO

SPONSORS: KYOSHO • O.S. ENGINES • DURATRAX • MUGEN • MEGATECH • DYNAMITE • ASSOCIATED • TTR • INNOVATIVE TECHNOLOGIES

NITRO



Top right: with his Kyosho Ultima ST truck, Jeremy Kortz showed them all how it's done and went home with the gold.
Bottom right: Mark Pavidis put on a great show and took home the first-place trophy for the second year in a row.



THERE ARE REGIONAL EVENTS AND NATIONAL EVENTS, and every other year, the Worlds rolls around, but if you ask diehard nitro racers which race they look forward to most, just about every one of them will say "Detroit."

Detroit—actually, Freedom Hill Raceway in Sterling Heights, MI—was the scene of the 11th annual Kyosho Nitro Challenge; more than 200 entrants crowded the track, and all were ready for battle. They were eager to win in the $\frac{1}{10}$ -scale Truck and $\frac{1}{8}$ -scale Buggy classes so they'd be able to take home the shiny trophy hardware. Famous names such as Kris Moore, Richard "The King" Saxton, Billy Easton and world champ Yuichi Kanai came to strut their stuff, show off their skills and entertain onlookers. If you missed it, here's how the weekend went down.

KYOSHO CLEANS HOUSE

PROGRESSIVE SUSPENSION ■ GS RACING ■ TREADZ TIRES ■ SIDEWINDER ■ JR ■ DYNAMITE ■ O'DONNELL ■ BC RACING ■ NATIONAL RC

CHALLENGE

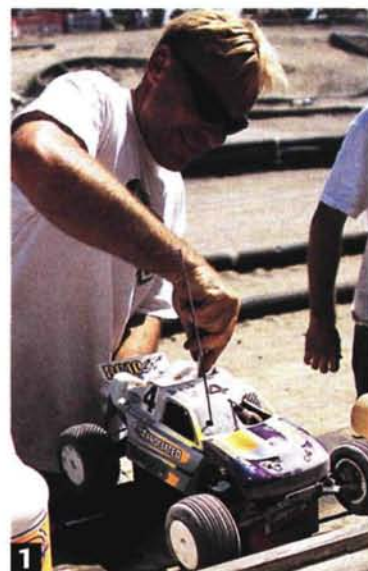


2001 KYOSHO NITRO CHALLENGE

THE ACTION

Qualifying began on Friday, and four, 7-minute rounds were scheduled; a lack of time, however, meant that qualifying had to be reduced to three rounds—one on Friday and two on Saturday. What did this mean to the drivers? For one thing, there was no time to mess around; the guys had to work extra hard to put down an impressive qualifying run and secure a good spot in the Mains.

In the interest of fairness, IFMAR qualifying was used; competitors raced the clock instead of one another. A reshuffle allowed the fast guys to run together and perhaps to improve their qualifying positions. Bump-ups in the Mains also helped some who could have used the canceled fourth qualifying round to better their qualifying position.



1. Richard Saxton's mechanic, Regan LeBlanc, prepares his truck for the start of the A-main. Regan also did a little racing. I don't want to say where he finished, but let's say that it was between the E- and the G-mains.

2. Meet Paul from OFNA. He said he would kill me if I didn't take a picture of him and put it in the magazine. Would you have refused? 3. The current 1/8-scale Off-Road Champ, Yuichi Kanai, gets his buggy ready for the next round of qualifying. Radio problems prevented him from finishing the A-main.

Kyosho's Jeremy Kortz came out of nowhere to nab the top qualifying position in the Truck class with his Kyosho Ultima ST. Kyosho also wrapped up the number-one qualifying position in the Buggy class with the help of last year's Kyosho Nitro Challenge winner, Mark Pavidis.

1/10 Truck A-main. This was a grueling 45 minutes long. Greg Degani and Richie Parkhurst managed to bump up to the A-main by placing first and

second, respectively, in the B-main. TQ Jeremy Kortz took the early lead, and Richard Saxton's and Jared Tebo's Associated FTGT rides followed close behind. After 5 minutes, Richard Saxton took over

the lead and pulled away from the pack. Jeremy Kortz was second but ran out of fuel, allowing Saxton to increase his lead. Greg Degani's Kyosho Ultima ST was working its way up from the back of the pack. He fought his way into fifth but then hit the pipes and popped off a link. All that hard work went right down the drain. Tebo was working on catching Kortz for the number-two position when he flipped his truck and allowed Kortz to get away. Early carb problems caused Billy Easton to lose laps, but by the halfway point he had worked his way into sixth. Jess Albright crashed and ripped the front end off his truck; in the process, he took out Kortz, who was trying to catch the number-one Saxton. Kortz quickly regained his composure and kept his second-place position.

During most of the race, Saxton had a commanding lead, and then at the 30-minute mark his throttle linkage popped off, and he led no more. Kortz and Tebo were left to battle for the lead. Tebo took advantage of Saxton's misfortune and captured first place. For the rest of the race, Tebo and Kortz exchanged positions. With 3 minutes to go, Tebo flipped his truck and Kortz took the lead and never looked back. He and his O.S.-powered Kyosho Ultima ST went home with the hardware.

1/8 Buggy A-main. Billy Easton and Jared Tebo



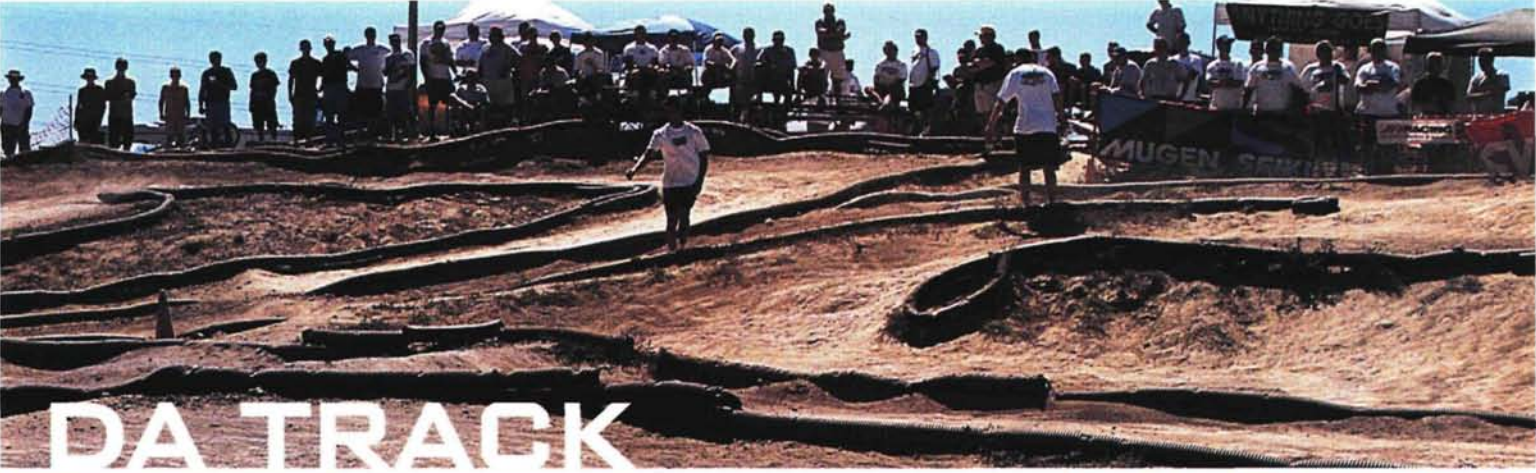
were bumped up from the B-main to take the ninth and 10th qualifying positions for the almighty, 45-minute A-main. Saxton still had some fire in his trigger finger, and at the start of the race, with his Kyosho MP 7.5, he got a jump on the rest of the pack to take first place. Kyosho drivers Greg Degani and Dean Sexton followed him. Shortly afterward, Degani took the lead from Saxton. Yuichi Kanai moved into second



THE TIM AND KRIS SHOW

WHO WINS THE WEEKEND'S AWARD FOR MOST OBNOXIOUS? Tim Long and Kris Moore from Mugen Seiki. A few people were bored between qualifiers, so Tim and Kris decided to liven things up a little. They took a .21 engine out of a box, bolted a flywheel to it and ran a fuel line from a fuel tank to the carb. Kris blew into the pressure side of the tank and pressed down on the starter box while Tim worked the carb and pressed the flywheel against the starter wheel. Let's just say that the sound of that engine running without a pipe under the tent was deafening. Those guys are nuts!





DA TRACK

FOR 11 YEARS, FREEDOM HILL RC RACEWAY HAS OPERATED INSIDE FREEDOM HILL COUNTY PARK in Sterling Heights, MI. A new track was recently built just a few hundred yards from the old one. It's probably one of the most incredible circuits I've seen, possibly because of its 15-foot elevation change. The track features many challenging uphill and downhill sections as well as a tabletop and nasty triples. The straightaway is a whopping 170 feet long!

The pit area is as impressive as the track; it features a long starting table with 10, 12V power outlets the pit guys can use to plug in their starter boxes. Large drag-strip type "Christmas trees" with yellow and green lights are mounted at the beginning and end of the pit lane and are used to start the race. The yellow light tells the pit guys to put the cars down; green tells them to go.

The drivers have a great view of the entire track from the top of the 15-foot-high drivers' stand. Large monitors just behind the starting table continuously display race information, and a large speaker broadcasts the race updates to the drivers.

There's a radio impound area on top of the stand just behind the drivers' stand and next to the fully air-conditioned announcers' booth. The bottom of the stand is used to store the equipment needed to maintain the track.

A large tent at the top of the hill, just behind the track, protects drivers from the sun. Plenty of tables and chairs are set up for pitting.



Above: the great Kahuna shows off his nitro expertise. He doesn't really know anything; this guy just didn't want to hurt the big K's feelings.

after getting past Mark Pavidis and Saxton, both of whom had crashed. Fifteen minutes into the race, it was "the Degani, Saxton and Pavidis Show" again. The lead seesawed between Degani and Saxton for a few laps, but Degani won the battle when Saxton's engine flamed out and he dropped into third. Degani came in for fuel and gave the lead to Pavidis, but a few minutes later, Pavidis had a flameout and Degani retook the lead with Saxton close behind. Another flameout put Saxton back in the number-five spot. With 16 minutes to go, it was Degani and Pavidis followed by Jimmy



Body clips?



2001 KYOSHO NITRO CHALLENGE

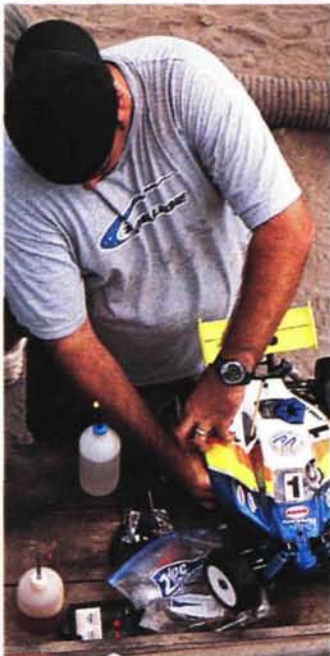
Babcock. Degani flamed out, and Pavidis—with his Novarossi/O'Donnell-powered Kyosho MP 7.5—took the lead and held onto first place for the win.

RACE WRAP-UP

It was a great weekend of racing; everyone had a great time with Jim McKenna and the Kahuna running a smooth, fun race. If you are ever in the Detroit area, I highly recommend you take a ride over to Freedom Hill RC Raceway and check it out. Congrats to Mark Pavidis, Jeremy Kortz and Kyosho for their wins. ■



Right: the legendary Jay Halsey readies his OFNA buggy for the next round. He has been working closely with OFNA to develop the 9.5 buggy.



Below, left to right: 1/10 Truck A-main top three; 1/8 Buggy A-main top three.



WINNERS' CHART

	FIN.	QUAL.	DRIVER	CHASSIS	ENGINE	PIPE	FUEL	RADIO	TIRES
1/8-SCALE BUGGY	1	1	Mark Pavidis	Kyosho MP 7.5	Novarossi/O'Donnell	O'Donnell	O'Donnell	Airtronics	Pro-Line
	2	2	Greg Degani	Kyosho MP 7.5	O.S.	Kyosho	O'Donnell	Futaba	Pro-Line
	3	7	Jimmy Babcock	Kyosho MP 7.5	O.S.	Kyosho	Sidewinder	Airtronics	Pro-Line
	4	9	Billy Easton	Thunder Tiger EB-4	RB/O'Donnell	O'Donnell	O'Donnell	Airtronics	Pro-Line
	5	0	Jared Tebo	Thunder Tiger EB-4	RB/O'Donnell	O'Donnell	O'Donnell	Airtronics	Pro-Line
	6	6	Dean Sexton	Kyosho MP 7.5	O.S.	Kyosho	O'Donnell	Airtronics	Pro-Line
	7	4	Jason Ashton	Kyosho MP 7.5	O.S./O'Donnell	O'Donnell	O'Donnell	Airtronics	Treadz
	8	8	Kris Moore	Mugen XR Works	O.S.	Rex	O'Donnell	KO Propo	Pro-Line
	9	5	Richard Saxton	Kyosho MP 7.5	RB/O'Donnell	O'Donnell	O'Donnell	JR Racing	Treadz
	10	3	Yuichi Kanai	Kyosho MP 7.5	O.S./O'Donnell	O'Donnell	O'Donnell	Futaba	Pro-Line
1/10-SCALE GAS TRUCK	1	1	Jeremy Kortz	Kyosho Ultima ST	O.S.	Kyosho	Sidewinder	JR Racing	Pro-Line
	2	3	Jared Tebo	Associated FTGT	Mugen/O'Donnell	O'Donnell	O'Donnell	Airtronics	Pro-Line
	3	0	Richie Parkhurst	Losi Triple-XNT	O.S.	RB	O'Donnell	Airtronics	Losi
	4	2	Adam Drake	Losi Triple-XNT	Picco	Trinity	Trinity	Airtronics	Losi
	5	7	Billy Easton	Associated FTGT	Mugen	Associated	O'Donnell	Airtronics	Pro-Line
	6	5	Dave Werthman	Losi Triple-XNT	O.S.	Associated	Trinity	Futaba	Losi
	7	9	Greg Degani	Kyosho Ultima ST	O.S.	Kyosho	O'Donnell	Futaba	Pro-Line
	8	4	Richard Saxton	Associated FTGT	RB/O'Donnell	O'Donnell	O'Donnell	JR Racing	Treadz
	9	6	Travis Amezcua	Losi Triple-XNT	Picco	Trinity	Trinity	Airtronics	Losi
	10	8	Jess Albright	Losi Triple-XNT	O.S.	O'Donnell	O'Donnell	Airtronics	Losi

Transmitter tuning for nitro

by George M. Gonzalez

Dial it in from the drivers' stand!

Although radio systems are designed for both nitro and electric RC applications, some features are especially useful for fuel-burners, and most exotic computer radios include features that are purely for nitro. Knowing how to exploit these features can make your nitro rig easier to start, more reliable and possibly faster on the track. Let's take a look at the most commonly used radio adjustments for nitro machines and how to use them correctly.



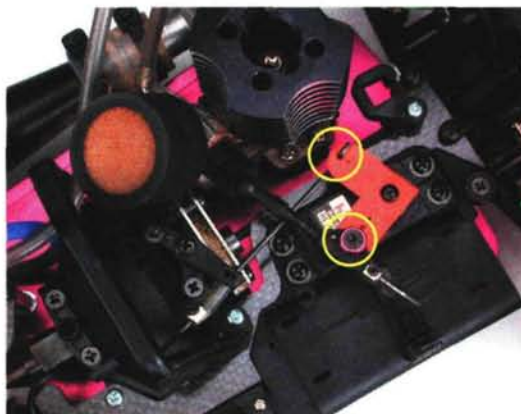
THROTTLE AND BRAKE ENDPOINT ADJUSTMENT (EPA)

■ **What does it do?** The EPA feature—or adjustable travel volume (ATV), as it is also known—allows you to set the throttle/brake servo's high points independently; in simpler terms, it allows you to precisely adjust servo travel in the throttle and brake directions without altering the neutral point. Without EPA capability, the throttle/brake servo will provide equal travel in both directions, and this means you'll need to install take-up springs on the throttle arm (and in some cases, the brake lever) to keep the linkage system from binding because of the excess servo travel.

■ How do you adjust it?

Before you can set the EPA, you must first center the throttle servo by making sure the throttle trim is in the neutral position. The next step is to properly align the servo horn. This will ensure that the servo provides equal throw in both throttle and brake directions. Next, access the EPA or ATV function on your transmitter's menu.

Adjusting the EPA is pretty similar on all radio systems. The total servo travel is indicated by a percentage value. When you squeeze your radio's throttle trigger, the amount of servo travel will be indicated onscreen as a percentage. Pressing the plus or minus keys increases and decreases the percentage as needed to properly adjust the throttle linkage. Adjust the throttle EPA so that the throttle arm fully opens the barrel of



If you have an RTR with a no-frills radio, you can still alter the throttle endpoints "mechanically." Moving a linkage closer to the servo's output shaft reduces the linkage's travel range.



The best computer radios (such as the Futaba 3PJS, left) have all the features described here and more, but even budget models such as the Airtronics Blue Blazer (right) can have useful nitro-tuning features.



The Blazer uses dials to adjust the throttle and steering endpoints.

of the carburetor without binding. Next, push your radio's trigger to the full brake position. The percentage of brake travel will be displayed on the screen. Adjust the brake EPA in the same manner as you adjusted the throttle EPA.

■ **Which radios have it?** Hitec, Futaba and JR include throttle

EPA on all their transmitters except the least expensive models. Those models are the Hitec Lynx Sport and Lynx, Futaba Magnum, Airtronics Blazer Sport and JR Python. All KO Propo transmitters are equipped with EPA.

IDLE UP OR STARTING POSITION (S-POS)

■ **What does it do?** Your radio system's "idle up" (Futaba and Hitec) or "S-pos" (Airtronics) feature is the RC equivalent to a choke in a full-scale car. It is used primarily to keep a cold, freshly started engine running until it warms up to its normal operating temperature. Pressing the "idle up" or the "S-pos" button partially opens the throttle to raise the idle. Once the engine has warmed up (typically, after about 30 seconds or a minute), pressing the button again returns the throttle arm to the neutral position, and the idle returns to normal.



Here, a JR-R1 displays the idle-up setting. As the value is increased, the amount the throttle is open when "idle up" is activated is also increased.

■ **How do you adjust it?** The idle-up position is adjustable between 0 and 50 percent on most radio systems; however, you'll need only to raise the idle 10 to 15 percent to keep a typical .12- or .21-size engine running during warmup. Start by setting the idle-up position to 10 percent. Next, start your engine and adjust the throttle increase percentage as needed to keep the engine running without stalling. The percentage you selected will be stored in your computer radio's memory to make subsequent start-ups hassle-free.

■ **Which radios have it?** Futaba 3PDF and 3PJ series; Airtronics M8; Hitec Lynx 3D; KO Propo EX-1 Mars; JR Racing R1.



When you flip the idle-up switch, the carburetor is opened to your preselected setting. Once the engine is warmed up, flipping the switch to "off" returns the throttle servo to the full-travel endpoint settings.

ANTI-LOCK BRAKING SYSTEM (ABS)

■ **What does it do?** Like the ABS system on a full-size automobile, your transmitter's ABS feature is designed to keep your vehicle's brakes from locking up during hard braking. This feature is very advantageous when racing on slippery parking-lot tracks or in situations where hard, late braking is required. Your radio's ABS feature can also help control the understeer that's common when applying the brakes on a full time 4WD vehicle.

When the ABS feature is turned to the "on" position and the brakes are applied, the throttle/brake servo will pulse, quickly engaging and disengaging the brakes much as you would pump the brakes in a real car. When ABS is set properly, you'll experience smoother, more controlled braking with fewer spin-outs in the high-speed corners.

■ How do you adjust it?

Although the method for adjusting the ABS function differs among the various radio systems, most allow you to adjust the total brake travel—the time between brake pulses and the delay or lag time before the servo starts to pulsate after engaging the brakes. As a starting point, set the total brake travel to 100 percent or a position that provides full braking without binding the throttle/brake linkage. Next, set the pulse speed to the fastest setting and then set the delay time to around a half second or slightly less.

Basically, once you've set the brake travel and pulse speed, you'll need only to make subtle delay time adjustments to accommodate your driving style and the track you're racing on. If you need more initial braking, set the ABS to provide a slightly longer delay time. This way, you'll have normal braking action for a moment before the ABS kicks in. If you want less braking, set the delay to zero; the ABS will engage the moment you apply the brakes, thus limiting the amount of initial braking. One word of caution: if you use very fast pulse rates, the servo may drain the receiver battery much more quickly than usual.

■ **Which radios have it?** Futaba 3PJ series; Hitec Lynx 3D; KO Propo EX-1 Mars; JR Racing R1.



The JR-R1 has a highly tunable ABS system.

FAIL-SAFE

■ **What does it do?** The fail-safe is a safety feature that's available only on high-end, pulse code modulation (PCM) radio systems. The fail-safe system works by returning the throttle/brake servo to its neutral position (or other position you've set) in the event of a signal loss. This is an invaluable feature for nitro-powered vehicles because it prevents the vehicle from going out of control if your onboard battery pack suddenly goes dead, your receiver crystal is ejected in a crash, or someone turns on a radio that's tuned to your particular frequency.

■ How do you adjust it?

Adjusting the fail-safe function is fairly straightforward. After accessing the fail-safe feature on your radio's menu screen, you simply need to program the throttle/brake servo's return position in the event of a signal loss. Most racers program the throttle servo to return to its neutral position in the event of a signal loss. You can also adjust the return position to apply the brakes so that the vehicle will come to a quick halt if it loses radio reception for any reason.

■ **Which radios have it?** Futaba 3PJ series with PCM module and receiver; JR Racing R1 with PCM module and receiver.



The Futaba 3PJ has a fail-safe mode, but you must be transmitting in PVM to use it. Below: it's possible to adapt non-PCM radios for fail-safe operation with an auxiliary unit such as this one from OFNA.



SOURCE GUIDE

AIRTRONICS (714) 978-1895; www.airtronics.net.

FUTABA Distributed exclusively by Hobbico/Great Planes; www.futaba-rc.com.

GREAT PLANES (800) 682-8948; www.greatplanes.com.

HITEC RCD INC. (858) 748-6948; www.hitecrad.com.

JR RACING Distributed by Horizon Hobby; www.horizonhobby.com.

KO PROPO USA INC. (310) 532-9355; www.kopropropo.co.uk.

Trinity P-94

Changing modified racing forever? by Derek Buono

Trinity claimed, "We will change modified racing forever!" Its splashy teaser ads for the new P-94 mod motor grabbed everyone's attention; what was the story with this motor? People even folded the ad in half like an Al Jaffee *Mad* fold-in to see whether there were any clues hidden in its ambiguous "radiation" logo. Surely, the new motor would be a radical departure from the mod motors with which we're all familiar—right? Not so—at least, at first glance.

The P-94 doesn't jump out as a motor that will "change modified racing forever," but when you take a closer look at the details and, as we did, strap one into a dyno, we think you'll agree that it just might be the next step in motor evolution that Trinity promised.



P-94 FEATURES

- Larger brush face designed for optimum contact with commutator.
- Extra set of proprietary brushes included.
- Pattern-wound "featuring Jim Dieter's favorite winds."
- Stronger FB9 magnets.
- Silver-soldered comm tabs.

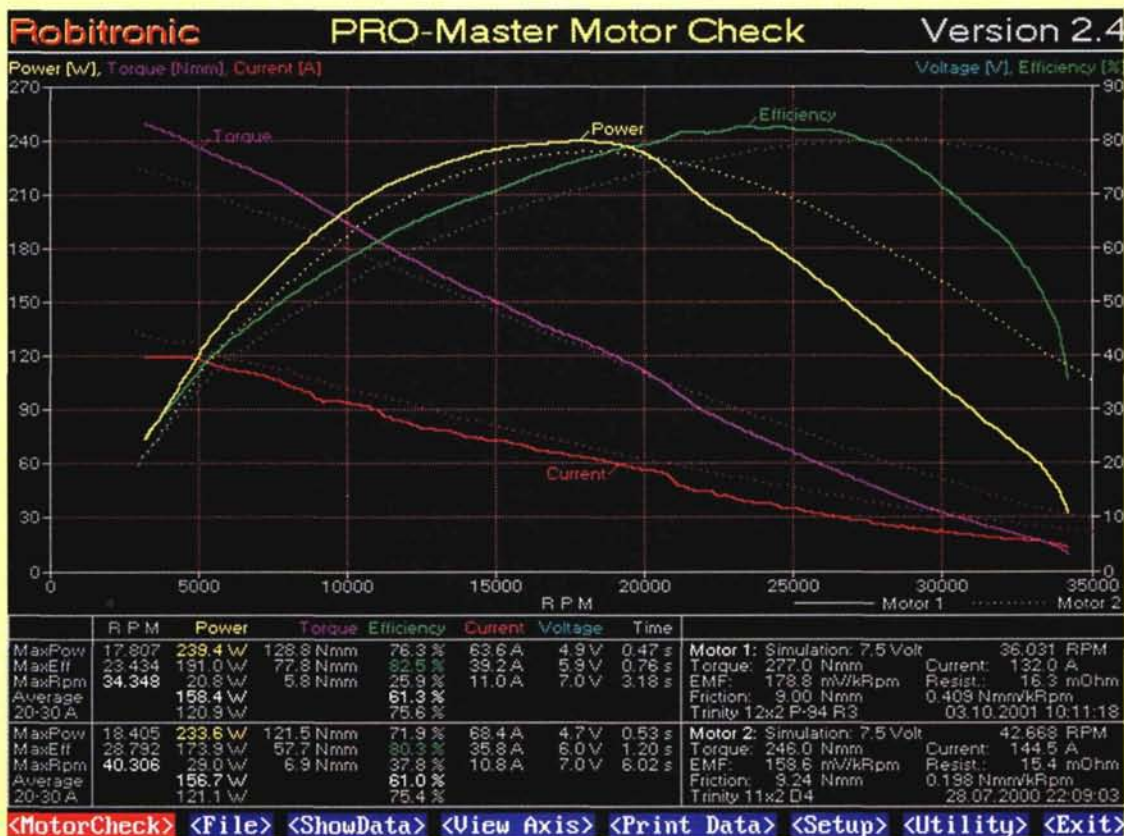
DYNO DATA

TEST RESULTS

Peak rpm	34,347
Peak power (watts)	239.4
Peak torque (Nmm)	128.8
Peak efficiency (%)	82.5

TEST-SETUP SPECS

Wind	12 double
Brushes	Stock
Springs	Purple (stock)
Comm diameter	7.51mm
Timing	22 degrees



DYNO TESTING

According to Trinity's team drivers, a 12-turn P-94 feels like a standard-brush 10-turn motor, so I decided to compare my 12-turn test P-94 with an 11-turn D4.

The number that most people look at is power in watts. "Power" in electric motors is like horsepower in a nitro engine: more is better. The P-94 clocks in with a more than healthy 239.4 watts of power compared with the D4's 233.6 watts. Torque is rated at 128.8 Newton millimeters with a very good efficiency rating of 82.5 percent, compared with 121.5 Nmm and 80.3 percent for the 11-turn D4.

What you can't see on the dyno is something Trinity claims is one of the big advantages

of the P-94—less need to rebuild. Because of the brushes' larger contact patch, there is less pressure on the comm per square millimeter, and the larger brushes reduce harmful arcing. Trinity says the team drivers have been testing the new brushes for months and have found that the comm requires less maintenance. That's a big bonus for racers who don't have a comm lathe or simply don't want to cut the brushes after every other run.

To test Trinity's claims, I tore down the P-94 that we ran in the Team Losi Matt Francis Edition Triple-XT (reviewed in the January 2002 issue). Sure enough, the comm was far cleaner than I expected after the number of packs that the motor went through.

THE VERDICT

Does the P-94 "change modified racing forever"? Although it does not represent the dramatic leap with never-before-seen motor technology that some were expecting, the P-94 is nonetheless a major advance in brushed motor performance. The new brushes increase power and efficiency significantly and extend the time between rebuilds. It's amazing what a few millimeters can do. ■

SOURCE GUIDE

TRINITY PRODUCTS INC., (732) 635-1600;
www.teamtrinity.com.



INSIDE THE P-94

The P-94's main feature is its brush size: they're larger. Oversize brushes aren't new, but Trinity's engineers say they've found the ideal size—larger than the current standard but smaller than the oversize brushes tried in the past; it measures 4.45x5mm (width x height); the old brush measures 5x5mm. The new brush is also designed to reduce "cogging," which Trinity defines as "dead spots in the commutating cycle when one of the three poles is not energized"; Trinity claims this is most pronounced in standard brush systems. Moving to a wider brush reduces the likelihood of cogging, but if a brush is too wide (as Trinity says the 5mm brushes are), the brushes will short one of the commutator's poles—not good. Either scenario will reduce efficiency and power, but with a 4.45mm brush, the cogging effect is eliminated, but there is no shorting, and that means maximum power and efficiency—if you believe Trinity's engineers. The dyno tells the real story. The brushes are the big story, but the P-94 isn't just the D4 with new brushes. Trinity dropped in FB9 magnets, which are claimed to be the strongest TDK has produced. The P-94 has silver-soldered comm tabs, layered winds and vented cans for higher turn motors to increase rpm.



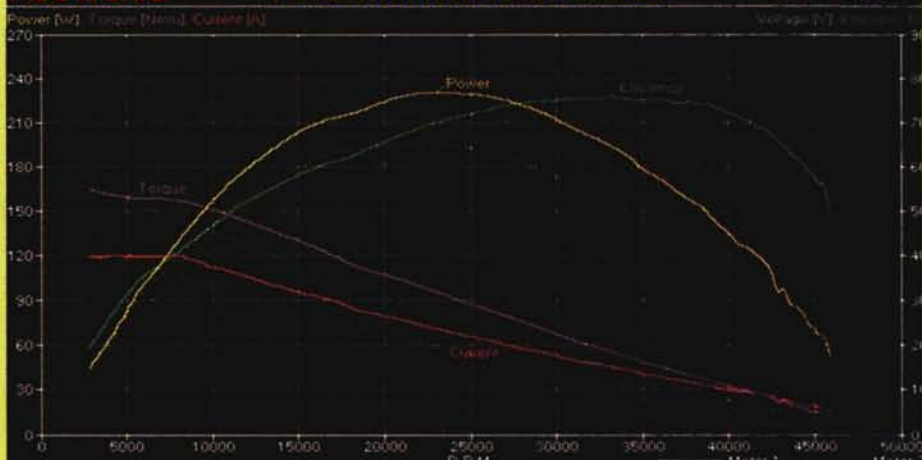
BIG BRUSH ENVY

It's easy to suffer from big-brush envy; after all, they're bigger, deliver more power and last longer. But there's no need to be envious; even if you can't afford a hand-wound P-94, you can still enjoy the benefits of big brushes by getting a P-94 brush conversion kit (item no. RC4410; \$12.99). It fits all Epic can-bodied motors, and it delivers all the advantages the brushes offer on the top-of-the-line P-94 series. I tested the kit on an otherwise stock Zircon (9-double) Speed Gem motor to see just how much performance there is to be gained.



When I compared the data, my first reaction was "holy crap!" I really didn't expect such a difference in performance just by installing the P-94 brush conversion, but the dyno shows a staggering jump in power from 196 watts to 230.2 watts. For you math-impaired folks, that's a 34.2W jump, or a 16.5 percent increase in power. There were also gains in torque and efficiency; the big brushes work.

Robitronic PRO-Master Motor Check Version 2.4



Motor 1	Simulation: 7.5 Volt	51.4% RPM
Torque	179.5 Nmm	Current: 11.4 A
EMF	124.5 mV/Rpm	Resist: 11.4 mOhm
Friction	12.18 Nmm	0.025 mV/Rpm
TRINITY	942 P94brush	30.10, 2001.11 us 0.5
Motor 2	Simulation: 7.5 Volt	44.53% RPM
Torque	179.5 Nmm	Current: 11.4 A
EMF	124.5 mV/Rpm	Resist: 11.4 mOhm
Friction	7.20 Nmm	0.154 mV/Rpm
TRINITY	942 zircon	30.10, 2001.10 us 5.7

<MotorCheck> <File> <ShowData> <View Axis> <Print Data> <Setup> <Utility> <Exit>

Rad RC T-Maxx 3-speed conversion

Nothing gets the blood pumping like a lotta speed, and if you're a Traxxas T-Maxx owner who believes, as I do, that faster is better, you'll really be into this month's "4x4." I installed and tested a 3-speed transmission from Rad RC Racing Products. How much does it improve my Maxx's performance? I'm tellin'!



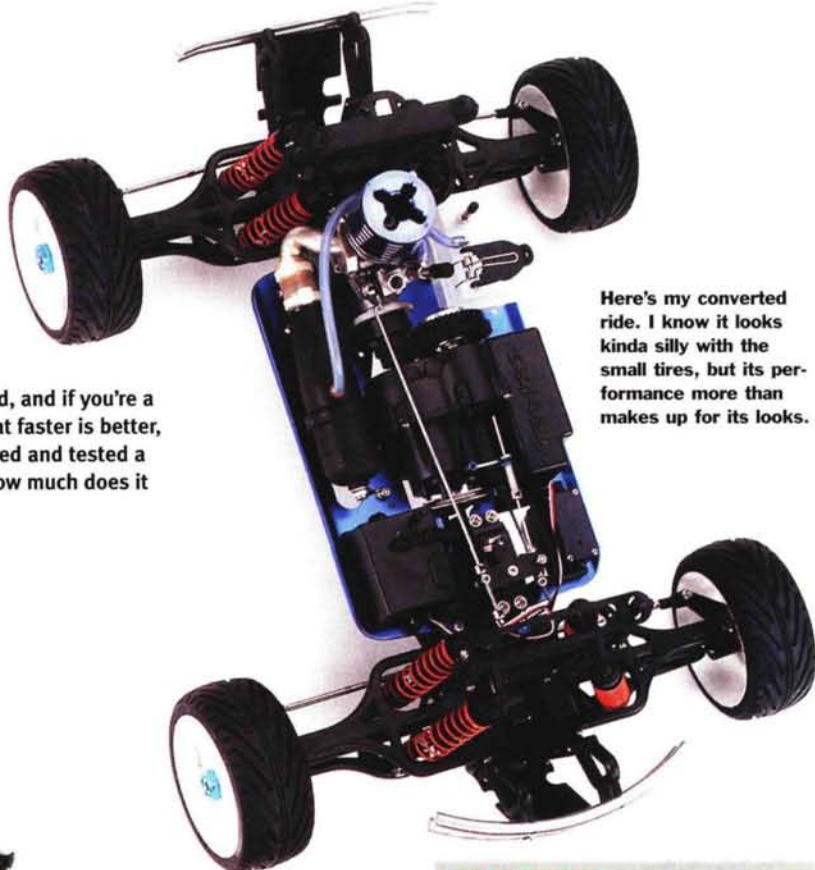
TESTING

For the first round of testing, I set up my stock T-Maxx with the recommended 1/8-scale buggy street tires, and I used the included "dummy clutch" on the external tranny. The dummy clutch allows you to set the internal 2-speed without the external one messing you up. I set mine so that it shifts at about 1/3 throttle. I was immediately impressed by the truck's acceleration and speed, and it still had another gear to go!

I went back to the workbench

and removed the engine, the fuel-tank mounting plate and the dummy clutch (so I'd be able to install the operational one). Before attaching the external transmission to the slipper shaft, I tightened the setscrew so I could slowly back it off to where I was happy with the shift point.

Back outside, I fired up the engine to adjust the external tranny, but I couldn't get the wrench to reach the adjusting screw on the external 2-speed clutch. On inspecting the tranny, I found that



Here's my converted ride. I know it looks kinda silly with the small tires, but its performance more than makes up for its looks.

KIT CONTENTS

- 75cc fuel tank
- Finger-type 2-speed transmission
- New slipper shaft
- 2-speed clutch bell
- Engine-relocating bracket
- Clutch nut
- Necessary hardware
- Dummy clutch

YOU'LL ALSO NEED

- OFNA 1/8-scale wheel adapters
- 1/8-scale on-road wheels and tires

Left: Rad RC includes everything you'll need to complete the conversion. You'll need to file the rear bulkhead slightly to make room for the engine. Below: the external 2-speed is where the third speed comes from; it hangs on a new slipper shaft on the gearbox. The clutch features screw-on gears that allow you to fine-tune your gear ratios quickly.



INSTALLATION

Installing the 3-speed on the T-Maxx is not difficult; in fact, the truck can go from run-of-the-mill to record-breaking in just about an hour.

1. Remove the stock transmission and take it apart so that you'll be able to install the new slipper shaft; install the new external 2-speed tranny now, too. When you do this, be sure to have the "O" on the finger clutch facing outward. The new slipper shaft doesn't have a hex; instead, there's a flat at the end for a setscrew to clamp down on.
2. Remove the engine so that you can install the new clutch bell and the kit-supplied engine-relocating bracket.
3. If your engine has a Traxxas EZ-Start, you'll have to convert it to pull-start because the starter motor would interfere with the new fuel tank.

4. The kit's clutch bell has two screw-on pinion gears. Install the larger pinion first and then the smaller one.
5. Before you reinstall the engine and new fuel tank on the chassis, you must attach them to the engine-relocating bracket. You must use this bracket because the engine and tank have to be moved backward slightly to make room for the extra clutch-bell gear. You might also have to grind the right rear bulkhead to provide clearance for the rear of your engine.
6. Last, check the gear mesh and make sure that there is a "tick" of play between the clutch bell and the spur gears.



The Rad RC kit also includes a new fuel tank. It is ROAR-legal and features a primer and a spring-loaded flip-top lid.



I used a set of OFNA 1/8-scale wheel adapters to mount these 1/8-scale on-road tires on my Maxx. I needed these tires to alter the truck's overall gear ratio and enhance its performance.

the pin that the clutch arm comes into contact with in the tranny's outer housing partially obscured the adjusting hole. I removed the external 2-speed, pulled it apart and opened the adjusting hole in the outer housing with the side of a drill bit. Holding the tranny parts together, I checked to see whether the wrench would now be able to reach the adjusting screw before I put the tranny back on the truck. It

GEARING

When you install the 3-speed conversion kit, you must use 1/8-scale buggy tires because the external 2-speed's gearing lowers the truck's overall gear ratio. Using large tires reduces that ratio even further, and the engine has to work extra hard to get the truck up to speed. The smaller tires raise the gear ratio closer to where it should be for good punch and top speed.

To help the truck accelerate a little better with standard T-Maxx-size tires, you can swap the clutch-bell gears down to a 15/19-tooth combination (instead of the stock 16/20-tooth combo), but you still won't see results as impressive as the 1/8-scale tire combo's.

The Rad RC 3-speed conversion is a lot of fun to play with, and all you diehard race fans out there will be happy to hear that it's ROAR-legal. This is just the first step for the 3-speed; Rad RC is currently developing a 3-speed system that will work with the Traxxas EZ-Start and also one that will allow you to use standard tires without sacrificing performance.

could! Knowing I'd be able to adjust the external 2-speed, I headed outside again with the tranny set to shift at 3/4 throttle. Performance was just amazing!

I have no doubt that my 3-speed T-Maxx would eat any stock T-Maxx for lunch. It has a lot of low-end grunt and impressive top speed. I was curious about exactly how much faster my converted Maxx was, so I broke out the radar gun and made a couple of high-speed passes. It consistently blew by in the upper 40mph range, with a best run of 48.2mph.

Just for kicks, I mounted a set of 1/8-scale off-road buggy tires and headed to the local off-road track. With a little suspension tweaking and engine tuning, I'm confident that the 3-speed Maxx could hang with 1/8-scale buggies. ■



TRICK TRUCK STUFF

KHB RACING

EZ-Start conversion kit

Until now, the Traxxas EZ-Start system offered on most Traxxas nitro vehicles could be used only on Traxxas engines. KHB has come up with this quick-fit, EZ-Start conversion kit for O.S. (shown) and Picco engines. The Picco kit will also fit Novarossi, HPI, Megatech and Thunder Tiger engines. The kit includes a new starter pin, backplate and screws.



Item nos.—KHBC1001 (O.S.), KHBC1001 (Picco); \$44.95.

click trip
RCCARACTION.COM
LINK TO VIDEO OF A RAD RC 3-SPEED T-MAXX IN ACTION.

SOURCE GUIDE

KHB RACING
www.khbracing.com.

RAD RC RACING PRODUCTS
(732) 269-5628;
www.radrc.com.

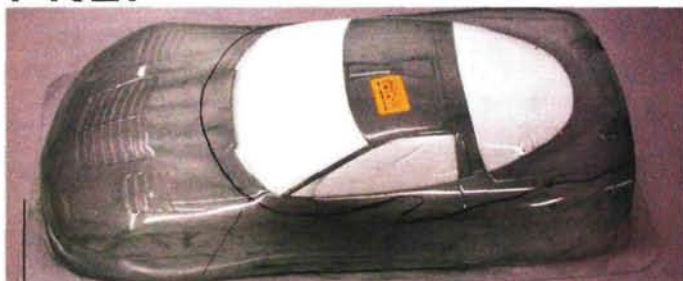
TRAXXAS CORP.
(972) 613-3300;
www.traxxas.com.

Patriotic painting

Of all the bodies that have been featured in "Body Shop," the one people comment on most frequently is the All-American Pro-Line Silverado that appeared in the April 2001 issue and is currently on the cover of our book, "Painting & Detailing RC Bodies." The flag pattern looks complex, but it isn't a difficult scheme to replicate if you follow the steps outlined here. I chose to apply the Stars and Stripes to a super-size HPI Corvette shell. You can't get more American than a Corvette!



PREP

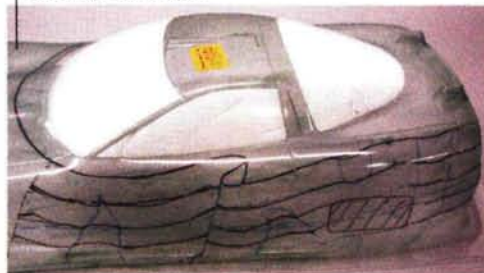


1 Wash the body and apply the interior window masks; then apply three coats of liquid mask. Allow the mask to dry between coats. To ensure even coverage, alternate the direction in which you brush on the coats. Use a permanent-ink marker to draw the top line of the flag as it would look if blowing in a breeze. I drew a second line around the midsection to develop the flag's dimension, and I added a few reference lines to create the folds along the flag.

2 Following the flag's lines, I added the individual stripes. I find it helpful to mark the "low" and "high" areas that I'll "shadow" or accent in subsequent steps.



3 Cut and remove an approximately 1/8-inch-wide border from along the entire length of the top of the flag. Spray this area gold to establish the top of the design. Clean the airbrush to remove any remaining gold.

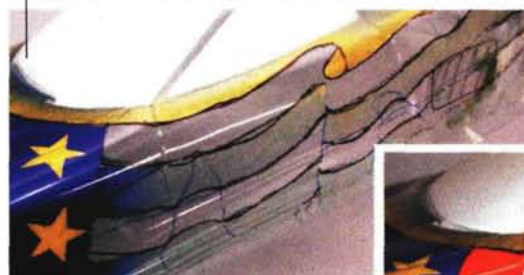


PAINT



4 The stars on the hood and sides of the car can be cut out of the mask, or you can make life easy and use Parma's no. 10805 star mask to create a uniform design. I removed the liquid mask from the hood and then laid out the individual stars.

6 Cut the red stripes out of the liquid mask, and examine your design to get a feel for the "high" and "low" sections. Add a small amount of red paint to the color cup that holds the leftover blue paint. Mix the red paint in the color cup with the residual blue, and you should have a dark, almost blood red. Spray a few test shots onto a paper plate until the color exits the airbrush as a dark red.



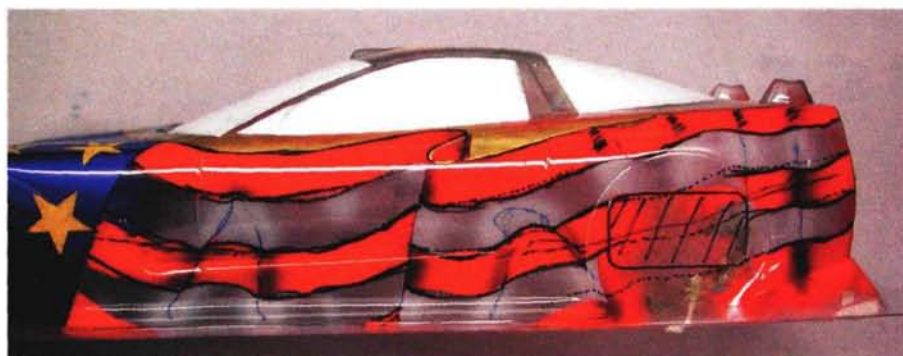
7 Spray the "low" areas of the flag, including the folds, with the dark-red mixture. It won't require a lot of paint because the red covers well.



5 Since it's best to work with the darkest colors first, let's get the blue out of the way and spray over the star portion of the hood. Once the area has been fully coated, spray out the remaining portion of the blue paint and add a few drops of water to the color cup—but don't clean the brush or the cup yet.



8 Spray out the remainder of the dark red, and refill the color cup with straight red; fill in the remaining sections of the flag. If you really want to add realistic detail, fade the red up to the high points of the stripes. Once you've finished spraying the red, clean your airbrush thoroughly.



9 Remove the remaining stripes and put a little of Pactra's Transparent Smoke into the color cup. In a pinch, you can substitute a light mixture of gray. Match the flow of the dark red sections with the gray paint. Blow the remaining paint out of the color cup and refill the reservoir with white.



10 Peel off the stars and coat the body's inside with white, starting with the stripes, and then painting toward the stars on the hood. Once again, get rid of any paint that remains in the airbrush and clean it out.



11 Remove the remaining liquid mask from the body and add a shadow on the folds of the flag using thinned black. I chose silver for the rest of the body; it complements the red, white and blue and keeps the colors bright. Give the finished body plenty of time to dry, then trim, add decals and mount it on your vehicle! If you followed the instructions closely, you should be proud of your efforts.

Just remember to mask carefully, to work your colors from the darkest to the lightest and to make your shadows subtle. Drop me a note, or email me, if you have any questions or if there's something you'd like to see here in "Body Shop." In the meantime, go paint something!



FRESH PAINT

Mike Ogle has authored many painting and detailing articles for *Radio Control Car Action*, and his fine work makes him an easy target for this "Fresh Paint" section. Mike's Immortal Force design was sprayed onto a Protoform Camaro drag body, and he made excellent use of the new Alclad II Lacquer Chrome paint, which is becoming very popular. After masking the flames, Mike applied Candy Blue to the nose section and then backed it up with Chrome. Next came a backing coat of Silver to make the main portion of the body opaque. He removed the flame masking and hit that area with fluorescent red, which he blended into the white backing.

Do you have a sharp, uncluttered photo of your best paintwork? Send it in! Explain the types of paint, products and techniques you used to finish it. Be sure to include your full name and address and your email address if you're online. For information about sending electronic images, check out www.caraction.com. Send print or slide photographs to "Body Shop," RC Car Action, 100 East Ridge, Ridgefield, CT 06877, USA.



ALCLAD II LACQUER Chrome Paint

What's the hottest new paint product for 2002? Without question, it's the new Chrome paint from Alclad II Lacquer. One jar is enough to cover a single body; after you've airbrushed it onto the inside, you back it with black or silver acrylic paint. The result is—chrome! The paint is easy to spray, doesn't require thinning and is impact-resistant. Want to see more of this paint? Check out Mike Ogle's Immortal Force in the "Fresh Paint" sidebar, and look for Body Shop next month (yep, it's monthly now) for a complete how-to featuring the new chrome stuff.

Item no. ALD 107, \$7.50.



SOURCE GUIDE

ALCLAD II LACQUER (813) 643-1232.
DYNAMITE (217) 355-9511; www.horizonhobby.com.
HPI RACING (949) 753-1099; www.hpiracing.com.
PACTRA INC. (815) 962-6654.
PARMA/PSE (440) 237-8650; www.parmapse.com.
PRO-LINE (909) 849-9781; www.pro-lineracing.com.
PROTOFORM INC Distributed by Pro-Line.

Team Orion Pro LCS V4.1

Have you ever made a tuning adjustment, modification, or gearing change but weren't able to feel even the slightest difference when you drove the vehicle around the track? The effects of subtle adjustments can go undetected unless you have a buddy with a stopwatch (or an AMB system) keeping track of your lap times. Recognizing this, Team Orion and Alex Racing have developed a personal lap-counting system (LCS) that allows you to accurately keep track of your lap times; this, in turn, helps you to dial in your car more precisely. But the Team Orion Pro LCS does a lot more than keep track of your laps.

FEATURES

- **Infrared "transponder" and receiver.** The Pro LCS uses infrared (IR) technology (just like a TV remote) to send and receive lap-counting data to and from your RC vehicle. Two components are included with the Pro LCS: the IR transmitter (which does the job of a transponder) and the IR receiver, which is positioned trackside. The receiver is housed inside a rugged, purple-anodized-aluminum case and is powered by a single 9V alkaline battery that, according to Orion, provides between 2 and 3 hours of operation. The transmitter's electronics are housed inside a purple-anodized-aluminum dummy transponder that can be attached to your vehicle's transponder mount or other convenient spot on the chassis or body. At approximately 1/2 ounce, the IR transmitter is slightly lighter than an AMB lap-counting transponder. In an electric vehicle, the transmitter plugs into the receiver's battery port; in a nitro-powered vehicle, it plugs into a third-channel port. A separate lead that contains the IR LED must be taped to your vehicle's side window or otherwise positioned so the invisible IR light beam can be detected by the IR receiver.

- **Factory-set vehicle ID number.** The IR transmitter is programmed with an ID number that cannot



Depending on your track setup, you may have to elevate the LCS receiver unit, as shown here.

FINAL CALL
Personal lap-counting comes of age—the Pro LCS is the real thing.

be changed. To allow multiple Pro LCS transmitter units to be used at the same time without interfering with one another, 100 different ID numbers are available. Each LCS system includes one transmitter; if you wish to purchase another, they cost about \$80 each.

- **LCD display.** The Pro LCS features a 2-line, lighted LCD display. At the end of each race, the total laps, average lap time and best lap time are displayed on the screen. By scrolling over to the "display" menu, you can check the lap times one by one. The lighted display is nice because it makes it easy to read the screen, even at night.

- **Two start modes.** Choose from either the "stagger" or "countdown" start modes. In stagger mode, the LCS doesn't start counting laps until a car passes in front of the IR receiver. In countdown mode, the LCS counts down from 30, 20, or 10 seconds (you choose the duration) and



starts timing laps when the timer reaches zero. The LCS beeps once per second in countdown mode and emits louder, longer beeps when the unit counts off the final 3 seconds before the start of the timing session.

- **Audible lap signals.** The Pro LCS receiver signals with 2 loud beeps every time the car passes by the IR receiver and registers a lap. Each time the LCS registers a lap that is faster than the previous lap, it registers the new lowest lap time with three beeps. You can even program a "target lap time"; when you meet or beat it, the LCS receiver emits four beeps.

- **Full programmability.** There are 5 buttons on the bottom left corner of the IR receiver's faceplate. Pressing the "menu" button allows you to navigate through nine function menus. Pushing the "enter" button accesses a particular function. The "up" and "down" buttons allow you to edit or activate certain options or scroll through various screens within each function menu. Race duration can be set for from 1 to 10 minutes. Pushing the "reset" button clears your lap times and all the data from the previous race. Now your Pro LCS is ready for another timing session.

- **Optional PC Link software.** With the PC Link software, you'll be able to download the lap-counting data from the IR receiver to a computer and use additional features from specially designed software.

TESTING

THE PRO LCS WAS TESTED ON A SMALL, OUTDOOR PVC TRACK designed for HPI Micro RS45 and on a crowded indoor 1/32-scale on-road racetrack. We drove a transmitter-equipped vehicle in front of the receiver's IR window to make sure that the receiver and transmitter were communicating with each other. Two loud beeps confirmed that the system was operating normally. After we set the race time for 5 minutes and chose the stagger start mode, the Pro LCS was ready for action. The timing session started immediately after the car passed the IR receiver. The LCS emitted two loud beeps whenever the car completed a lap, and when the timing session was over, the total laps, average lap time and best lap time were displayed on the screen, just as the instructions promised they would be. The Team Orion Pro LCS is a must-have tool for serious racers. It lets you know whether your tuning and gearing efforts have paid off by lowering your lap times or if another wrenching session is needed because your lap times went up. You can't fool the Pro LCS!



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PRODUCT WATCH

Trinity Carb Restrictors

IN 1/10-SCALE NITRO RACING, in which over-powered vehicles are the norm, it's usually the guy who can get the most power to the wheels who wins—not the one with the most powerful engine. Horsepower is great, but when an engine unloads with a big hit in a narrow high-rpm range, it usually means a spin-out-prone ride. That's where Trinity's carb restrictors come into play; they drop into any "big-bore" O.S., Picco, Novarossi, or RB carburetor and are designed to smooth out an engine's power curve by reducing the size of the bore.

Three sizes are offered: 0.170, 0.180, and 0.190 inch (the number refers to the size of the opening at the restrictor's tip). Buy them individually, or buy the set of three (just buy the set, cheapskate).

Installing the restrictor is a simple matter of dropping it into the carb opening and installing the air filter over it. Just how much you'll notice the effect of the restrictor will depend on the size of the restrictor, your needle settings and your engine's power output, but we've found that the restrictors do make peaky engines much more drivable and offer a slight decrease in peak rpm and full-throttle power. That

FINAL CALL
A useful tuning device for the thinking nitro racer.

might sound like bad news, but it's better to have 90 percent of your engine's power and be able to put all of it onto the track than to have 100 percent of your engine's power output but waste it on fishtailing and spinning out.



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to tweak your carb's needles, but this 120mm screwdriver shank makes it easy to reach them without removing your car's body. The small-diameter handle won't block your vision as you line up the screwdriver with the carb needle, and the handle is small enough to prevent you from applying excessive torque to the needle if you need to bottom it out in the carb. In addition to fitting carb needles precisely, the 3.2mm blade is a good size for setting idle-stop screws, and the tool's magnetized tip will make installing screws in tight spots easier. You can certainly tune an engine without this screwdriver, but not as easily; it's certainly worth adding to your toolbox.

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Xtreme Engineering Tune-N-Tote

THE TUNE-N-TOTE (TNT) from Xtreme Engineering is an aluminum tabletop tuning station, workbench and storage unit in one that now lets you adjust your engine on the bench. No more running your engine, bringing it back to the pits, tuning it, running it again and bringing it back. The deluxe TNT (shown here) features a 5-inch-deep drawer; the standard model omits the drawer. Both TNTs measure 21x16 inches. A 20.5x23-inch monster benchtop is also available.

Four bearing-supported rollers accommodate almost any 1/8- or 1/10-scale vehicle; they allow you to put the drive train under a realistic load and then set the high- and low-end needles, idle stop, steering alignment and brakes without ever setting your vehicle on the ground. Various mounting holes make it easy to reposition the rollers to suit vehicles with wheelbases of from 7.5 to 15.75 inches. Four included bungee straps secure your vehicle during transportation and run-up, and the TNT's blue powder-coat finish has proven durable so far.

We tested the TNT with a variety of vehicles from a T-Maxx to multi-speed touring cars. The rollers allowed the T-Maxx's internal clutches to engage without putting stress on the drive train, and the TNT worked out well for setting carb needles and 2-speed transmission shift points.

A few points of note: the TNT's drawer isn't lined, so tools and parts will slide around and make a racket; do yourself a favor, and line the drawer with a rubber pad from the hardware store. Be smart and only use the TNT outdoors; if you fire up your engine indoors, you'll be unpleasantly surprised to discover just how quickly even a small engine can fill a room with exhaust. Also

be careful when you set up your vehicle's brakes; in addition to stopping the wheels, the brakes must also stop the rollers. The bungee cords should hold your machine in

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Rad-Tech Racing Nebula and Radiant Maxx Wheels



RAD-TECH'S SPLIT-SPOKE RADIANT HOOPS and "twisted" Nebula wheels are both machined of 6061 aluminum billet and polished to a mirror-like shine. The Radiants have the standard Traxxas Maxx offset, while the Nebula wheels have a 3/4-inch offset; that means installing a set will widen your Traxxas E-Maxx or T-Maxx by 1 1/2 inches. The machine work is flawless, and the "mirror polish" truly lives up to its name; if you can't see yourself in these wheels, you must be a vampire (hope you're wearing sunblock).

Rad-Tech obviously didn't take any shortcuts in machining the showy sides of the wheels, but it was a pleasant surprise to find a similar attention to detail on the parts that don't show. Most notably, Rad-Tech doesn't cut corners by eliminating the hex-hub socket in favor of a slotted axle interface. That means you can use these rims with Pro-Line disc-brake rotors—a superlative combo (see the "Product Watch" on the Pro-Line discs in the January 2002 issue; they're shown on Nebula rims); and you don't have to worry about your axle crosspins falling whenever you remove a wheel.

FINAL CALL

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The Radiant rims are as strong as their beefy design and aluminum construction would have you believe, and even the feathery-looking Nebulas proved unbendable in normal use (which still represents a good beating, since we are talking about Maxx trucks). Neither design is particularly light; plastic stockers weigh 54 grams, while the Radiant and Nebula designs weigh 125 and 136 grams, respectively. The extra mass results in a slight but detectable acceleration lag when you use the wheels on a T-Maxx, but the mondo torque of an E-Maxx easily absorbs the extra heft.

At \$175 for a set of four, Rad-Tech's wheels aren't for everyone. But if style and durability are more important to you than pure performance, and you can afford them, the Radiant and Nebula wheels (or Rad-Tech's other designs) are some of the best you can buy. ■

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Install no-loss connectors

Pull the plug on power loss!

by Derek Buono



JST connectors, more commonly known as "Tamiya plugs," are the RC standard for connector-equipped stick packs, chargers and ESCs, and for most non-competition applications, they're fine. But once you start to upgrade your vehicle with a higher-capacity battery or a more powerful motor—or both—the shortcomings of Tamiya-type plugs soon become apparent. At the very least, the plugs' relatively high electrical resistance will waste battery power; at worst, the amp draw of a powerful modified motor can heat the plugs to their melting point. What to do? Many racers eliminate plugs altogether by "hard-wiring," or directly soldering, all their car's motor and battery connections, but that's hardly convenient for play or anything less than deathly serious racing. The next best thing is an upgrade to the "no-loss" connectors best exemplified by Deans' Ultra plugs, the popular red-and-black Powerpole connectors offered by DuraTrax and Acer Racing (among others) and AstroFlight's Zero Loss plugs.

"No-loss" connectors are called such because they have no electrical resistance—sort of. In truth, the connectors have a resistance that is equal to or less than the resistance of the length of wire they replace and therefore add no resistance to the electrical system, compared with not using connectors at all. Now that you know the benefits, let's get to the "how to."

BEFORE YOU BEGIN ...

Discharge your pack completely before starting to work on the connectors and wiring. This will prevent your damaging the pack in the event of an accidental short circuit, and it will also protect you; even when only partially charged, a shorted Ni-Cd or NiMH battery pack can pump over 1,000 amps—usually with lots of sparks and heat. Not good.

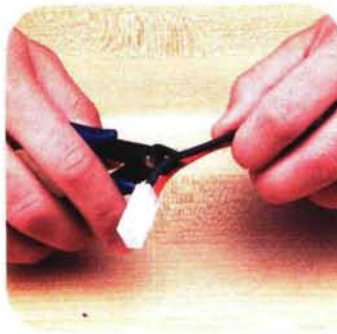
To discharge a battery, use a load device such as a bulb discharger, or simply run your car or truck until it stops.



Don't even think of working on a battery pack before you've made sure that it's fully discharged.

Step 1. Junk the old plugs

Use a pair of diagonal cutters or the cutting jaw of your wire strippers to remove the old plugs. Cut the two wires one at a time; if you snip both simultaneously, the wires will short against the cutting tool.



Hopefully, this funny picture will remind you not to snip both wires simultaneously, but a shorted pack is no laughing matter.

Cut only one wire at a time. Don't strip the insulation off a wire until you are ready to finish the job.

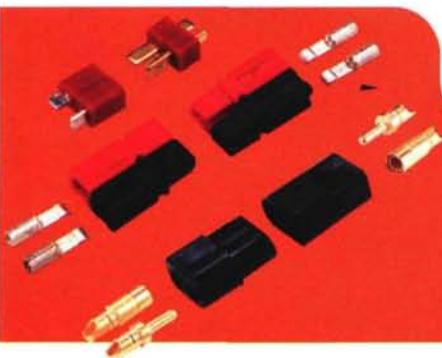


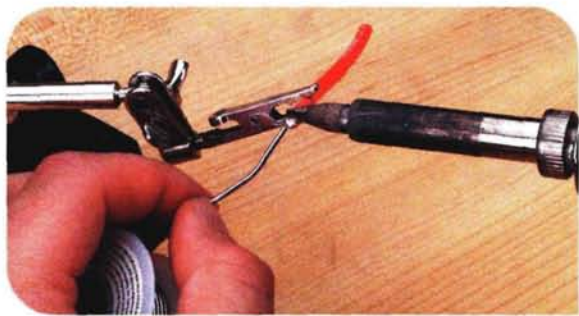
Tip

Just as you snipped the wires one at a time, you should also tin and attach them one at a time as you follow the steps in this "how to." If you don't, the exposed wires will be an invitation to a short circuit. An accidental short won't hurt anything if you have already discharged your pack fully, but it's best to avoid shorting.

PLUG PICKS

Deans (top), Powerpole and AstroFlight connectors all have resistance that is equal to or less than the wire they replace, so all will perform equally well in your vehicle. But there are important differences to consider: Deans plugs are the smallest, and they're especially good for applications in which a large connector would get in the way. Powerpole and AstroFlight connectors both have shielded contacts and, like the Deans plugs, the AstroFlights have a polarized shape that prevents them from being plugged in "backwards."





Tip

A "third-hand" tool such as the one shown here is a great help when you're soldering; it holds the work steady, frees your hands to guide the solder and soldering iron precisely and allows you to avoid handling hot wires.

Tin the wires to ensure a good solder joint that won't break during a hard impact.



Step 2. Tin the wires and connectors

"Tinning" is the process of coating the wires and connectors with solder to help make a strong bond when the parts are joined. Start by stripping the insulation off the ends of the wires—about $\frac{1}{8}$ inch for Deans and AstroFlight plugs and about $\frac{1}{4}$ inch for Powerpoles. To tin the wire, coat it with flux, then touch the solder to it as you apply heat with your soldering iron. When you've coated the wire with solder, stop; any additional solder will just seep under the insulation and make the wire inflexible.

If you use Deans connectors, you should also tin the solder lugs. Work quickly; if you overheat the lug, it will melt the plastic plug body that's molded around it. Powerpole plug inserts do not have to be tinned.

RESISTANCE IS FUTILE

How much better are zero-loss connectors than Tamiya-style plugs? We measured the electrical resistance of Deans, PowerPole and the old standby Tamiya connectors to find out.

- Tamiya type: 0.0033 ohm
- Deans Ultra plug: 0.0009 ohm
- PowerPole: 0.001 ohm
- AstroFlight: 0.0011 ohm

What does it all mean? By switching to zero-loss connectors, you'll send more power to the ESC and motor and waste less on heating connectors. The numbers become even more telling when you factor in wear; after hours of use and many plug/unplug cycles, Deans, AstroFlight and Powerpole connectors lose little efficiency, whereas Tamiya plugs lose their grip and develop even more resistance.

Step 3. Don't forget the shrink-tubing

This applies only to Deans connectors, which include heat-shrink tubing to cover the solder lugs after the plug has been installed. You must slip the tubing over the wires before you solder the plugs. Slide the tubing as far down the wire as you can so that the soldering-iron's heat does not shrink it prematurely.

Use shrink-tubing to protect the Deans plug from shorting out in your pit box.



Step 4. Solder the connections

DEANS. To solder Deans connectors, it's easiest to hold the connector in your third-hand tool, touch the tinned wire to the tinned lug and heat them with the iron. The solder on the parts should liquefy almost immediately and join them. Remove the iron, but hold the wire in place until you see the solder solidify (it takes only a couple of seconds). Flex the joint to make sure it's strong; if the pieces pop apart, resolder them. When you're satisfied with the joint, slide the shrink-tubing over it, and shrink the tubing with a match or lighter. Repeat for the other wire and lug to complete the female battery plug installation; then repeat all the steps to install the male plug on the ESC or charger.



You can use a cigarette lighter to shrink the tubing tightly around the solder joints. Just don't hold the flame too close; a hair dryer or a heat gun will also do the trick.

POWERPOLE AND ASTROFLIGHT

Powerpole and AstroFlight connectors are a little different. Use the third hand to hold the tinned wire vertical, then slip the connector's "tongue"

over the wire. Press the broad side of the soldering iron's tip along the tongue, and flow solder into the opening on top. Let the parts cool, then try to remove the tongue. If the joint is solid, slip the red (for a positive wire) or black (negative) connector shroud over the tongue until it clicks. Before soldering the contacts of AstroFlight plugs, slide the plug body over the wires. Solder the wires to the contacts, let them cool, then pull the contacts into the plug body.



It will take an extra second to get the solder to flow into the tab. If the wire gets too hot for your fingers, hold it with a pair of pliers.



THE BIG FINISH

After installing the battery plugs, repeat the how-to steps to outfit your charger and ESC. When you've finished the job, you'll notice that the connectors stay cool when in use, and if your old Tamiya connectors really got hot, you'll probably notice that your motor now has more punch and your car runs a little longer with the new plugs. Wasting energy on heating high-resistance plugs is like running a light bulb off your battery pack; that's juice you'll be glad to get back in the form of speed and power. ■

SOURCE GUIDE

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BECAUSE LIFE'S TOO SHORT TO BE A SHEEP

The opinions expressed on this page do not necessarily represent the opinions of the entire *RC Car Action* staff. Any resemblance to reality is purely coincidental. Send your correspondence, hate mail, love letters, photographs—anything you like—to Chris's Back Lot, c/o *RC Car Action*, 100 East Ridge, Ridgefield, CT 06877-4606 USA. My email address is: chris@airage.com.



We get lots of stuff like this: "In a white room, there's a white truck, somewhere on the cluttered desk." Kind of sounds like an old rock tune. Look, if we have to play "I bet you guys at *RC Car Action* can't find my RC vehicle in this photo"—we won't even bother to try. And you're guaranteed never to make it into RR. I bet this guy loves that tired joke about the polar bear in a snow-storm.



This is my favorite—"The Blair Witch Project Ride." It's the "Let's shoot the vehicle in the shadows for that cool 'horror-movie' look; yeah, that's the ticket. Those weirdos at *RC Car Action* will love that!" Wrong! Keep it in the sun—preferably, shining from behind you. (Trimmed body posts would be nice, too.)

OK, let's see how this guy did:

- Nicely framed—check.
- Sufficient lighting—check.
- Nice low angle for scale effect—check.
- Unobtrusive background—check.
- Focus—d'oh!



Looks more like a deer tick on a green Dalmatian than an RC car. Keep on-road cars on the road. No reenactments of the movie "Escape From Dog-Fur Jungle III."

→ HOW NOT TO GET INTO READERS' RIDES

All of the editors at *RC Car Action* get email letters that go something like this: "I'm losing my patience, man; I've been sending in photos for a long time now, and I've never once made it into 'Readers' Rides'! What gives? I'm gonna cancel my subscription! Really—I mean it, I will!" Well, let me tell you something; if we did put in some of the wacked-out photos we get, a lot of people *would* cancel their subscriptions.

Look, I don't want to be a wise guy (can't help it; I was born that way), but some of the photos we get are just totally unusable. I know that you're proud of your RC stuff, and you have every right to be—it's yours! So now, I want to show you what *not* to do and try to help you guys get into "Readers' Rides." See, I'm your friend

OK, let's look at where a few of our actual RR submissions went completely awry. Names have been changed to protect the photographically challenged.



Here we have a submission from little Johnny Pile O'Parts called "the Basket-Case Ride."

The clean background is good, but you wouldn't ask your girlfriend to chop off her arms and legs before you photographed her, would you? Lose the stand—car in one piece, please—thank you.



This RC10 is doing an impression of a 2-pound salami squeezed into a 1-pound bag. Frame the entire car, guys, OK?—with a margin (or border) on all sides. What's more, shoot off-road vehicles on dirt and on-road vehicles on pavement; no aquarium gravel, please. Save that for when Associated introduces its RC10 Turbo Goldfish.

ment; no aquarium gravel, please. Save that for when Associated introduces its RC10 Turbo Goldfish.

Oh no! It's a cluster truck. The more, the merrier? I don't think so! One vehicle per photo, please.



HERE'S THE RIGHT WAY

- Ground level for low-angle scale effect. Note the trimmed body posts.
- Outdoors, sun at my back. Body posts are trimmed.
- Vehicle is in its natural habitat, with trimmed body posts.
- One vehicle (not three) centered in the frame—click!

And *that's* how you get into "Reader's Rides"!



Here endeth the lesson. I do, however, appreciate your efforts. For being good sports and putting up with my "wiseguyishness" (like that word? I just made it up), I'll be sending a set of *RC Car Action* stickers and a T-shirt to all of the featured "photographers." ■